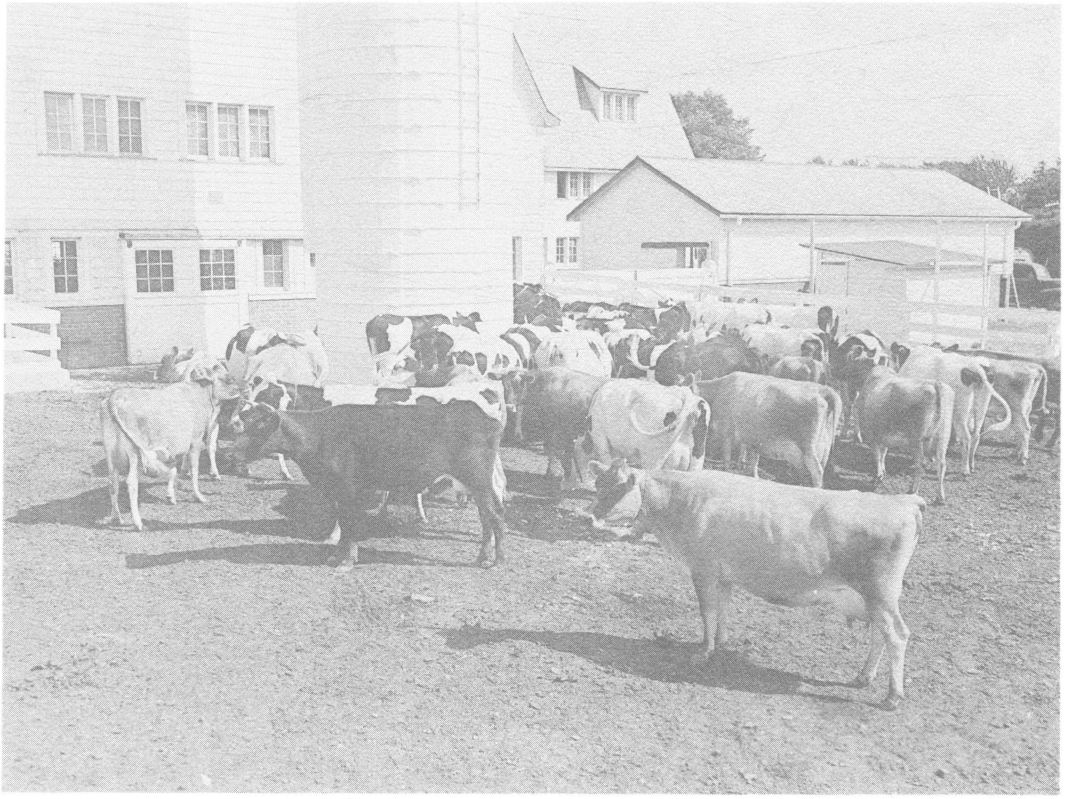
Research Circular 80 December 1959

SHIFTS in the OHIO DAIRY INDUSTRY

S. R. SCHULTZ and E. F. BAUMER



Ohio Agricultural Experiment Station
Wooster, Ohio

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INTRODUCTION

A 1954 research circular[1/] shows milk and cream production shifts as they occurred in the period 1940-1950. Such information continues to be in great demand by producer and handler organizations and other groups interested in studying Ohio's dairy industry. Therefore the present circular has been written, to supply more current information for use by interested groups. This circular has been expanded to include data on changes in numbers and locations of dairy plants.

Data in this publication have been summarized by either crop reporting districts or land use divisions of the state. Data on a county basis can be found in the Appendix.

1/ E. F. Baumer and R. H. Pollock, Shifts in Milk and Cream Production in Ohio. (Ohio Agricultural Experiment Station, Wooster, Ohio, Research Circular 24, February, 1954).

SUMMARY

If any one word typifies the Ohio dairy industry in the past ten years, it is CHANGE. Changes have been taking place both among farmers and dairy plants. Both have experienced significant decreases in the number of units involved and increases in total volume of products produced.

It is widely known that the total number of farms in Ohio has been declining, but it may not be so widely known that the number of farms selling whole milk has been declining faster than the total number of farms. In the 1949-1954 period, "total farms" declined 11 percent while farms selling whole milk declined 22 percent.

Fluid and manufacturing producers have not experienced the same rate of decline in producer numbers. In recent years farmers selling manufacturing milk are withdrawing from production much faster than those selling fluid milk. In 1949 there were approximately two manufacturing producers for each fluid producer. By mid 1959, the number in the two groups was approximately the same.

In purchases of milk from Ohio dairymen by dairy plants, the total volume per month has been higher for fluid plants than for manufacturing plants. Since 1948, the monthly purchases of fluid milk have been increasing at a rapid rate, while monthly purchases of manufacturing milk have been declining.

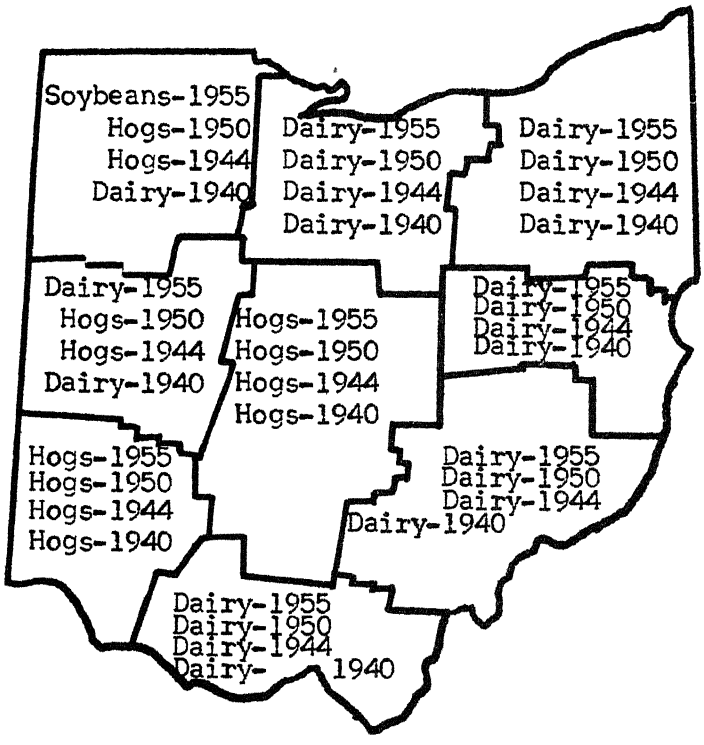
Another significant shift has taken place in the size of producer. Fluid milk producers have increased average production from 189 pounds per day in 1948 to 411 in 1958. Manufacturing milk producers have not increased production nearly as rapidly. In 1948 their average production per producer was 89 pounds compared to 123 pounds in 1958.

Sweeping changes are also affecting dairy manufacturers. Plants handling creamery butter, cheese, and evaporated milk have declined from 133 in 1952 to 105 in 1957. Total number of milk plants in Ohio (including fluid plants) declined from 817 in 1952 to 563 in 1957, and 524 in 1958.

Certain patterns of concentration are evident: Condenseries located in Ohio are mainly in the northeast and southeast sections. Swiss cheese plants are almost entirely in the northeastern and eastern cropping districts. Plants that are not especially concentrated by region include those manufacturing nonfat dry milk, creamery butter, cottage cheese, and evaporated milk.

THE IMPORTANCE OF DAIRYING IN OHIO

Figure 1: Most Important Farm Enterprise as Measured by Gross Cash Income, by Crop Reporting Districts, Ohio, 1940, 1944, 1950, and 1955



SOURCE: Department of Agricultural Economics and Rural Sociology Bulletins Number 156, 190, 228, and A.E. 269, Columbus, Ohio, 1942, 1945, 1951, and 1956, respectively

The importance of the dairy enterprise to Ohio farmers is made clear by Figure 1. For selected years from 1940 to 1955, dairy farming has been the most important source of gross cash income in five of the nine crop reporting districts. In the northwestern district, dairy was the main enterprise in 1940, but shifts have brought livestock and grain farming into greater importance since that time.

The western district has shifted its enterprises several times since 1940. Dairy was the main enterprise in 1940, hogs in 1944 and 1950, but by 1955 dairy was again the main source of gross cash income.

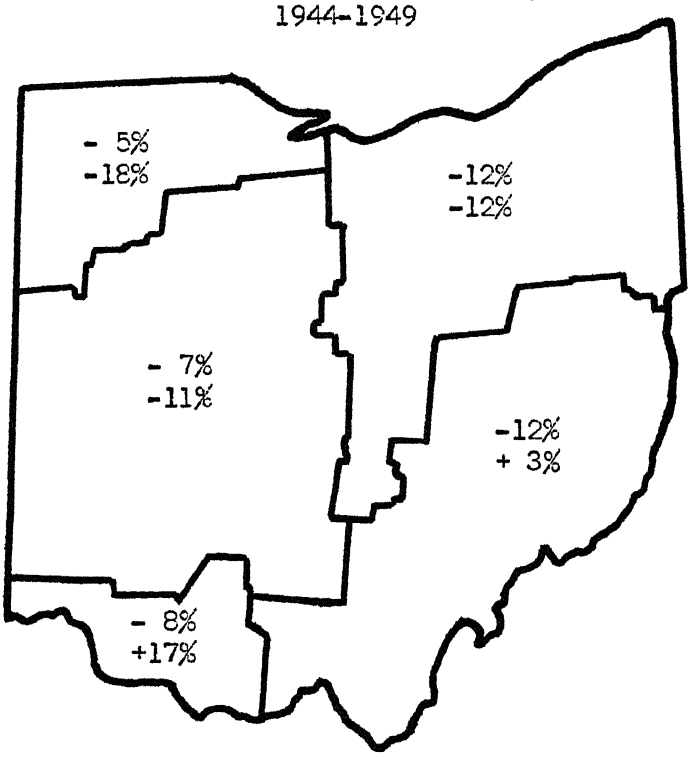
For the state as a whole, the sale of dairy products (not including calves or cull cows) amounted to 22 percent of the total cash receipts in 1957. Hogs were the second highest source of cash receipts, amounting to 17 percent of the total. Dairy products ranked first in 43 of the 88 Ohio counties, as a source of farmers' cash receipts in 1957.

THE LAND USE MAP

In an effort to analyze most carefully the shifts in producer numbers, a breakdown of the state on the basis of land use has been made. This breakdown has importance in this study of shifts in the dairy industry. For example, if the greater part of a farm must be used for meadow, pasture, and woods, this restricts the possibilities of grain farming and implies livestock to graze the pasture. It seems apparent that farmers in northwestern and western Ohio have many more alternatives than eastern and northeastern Ohio farmers. Consequently, shifts would be expected to occur more often and be of a greater magnitude in the western sections of Ohio than in the eastern sections.

SHIFTS IN MILK PRODUCTION IN OHIO

Figure 2: Percentage Change in Total Number of Farms and Percentage Change in Number of Farms Reporting Whole Milk Sold, by Land Use Divisions, Ohio, 1944-1949

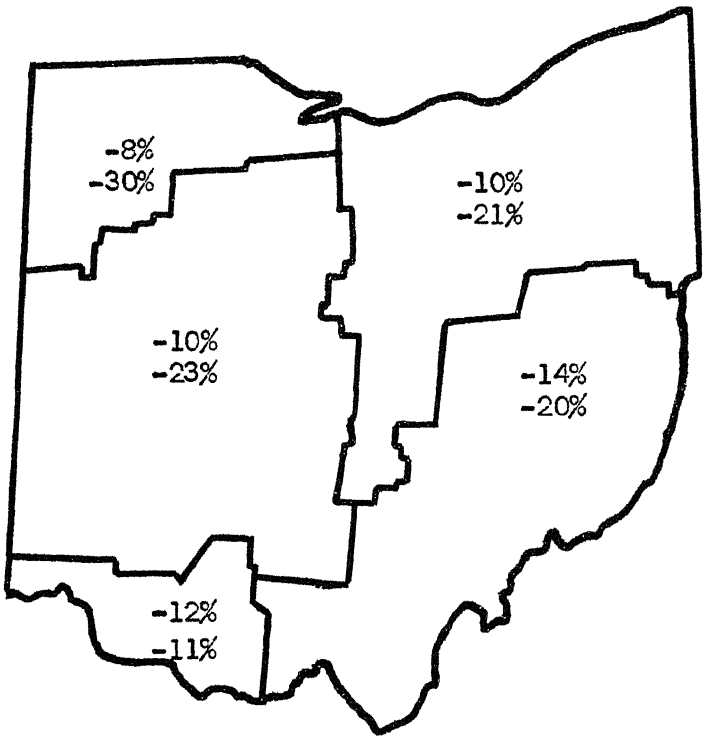


Upper Figure: Total farms
Lower Figure: Farms reporting whole milk sold

SOURCE: Census of Agriculture for Ohio, 1950

During the years 1944-1949, there was a mixed pattern of changes in Ohio's production of whole milk. Only in northeast Ohio was the rate of decline in dairy farms comparable to the rate of disappearance of all farms. In northwestern and western Ohio, dairy farms were declining in number more rapidly than were all farms. In southeastern and southwestern Ohio, the number of dairy farms was actually increasing.

Figure 3: Percentage Change in Total Number of Farms and Percentage Change in Number of Farms Reporting Whole Milk Sold, by Land Use Divisions, Ohio, 1949-1954

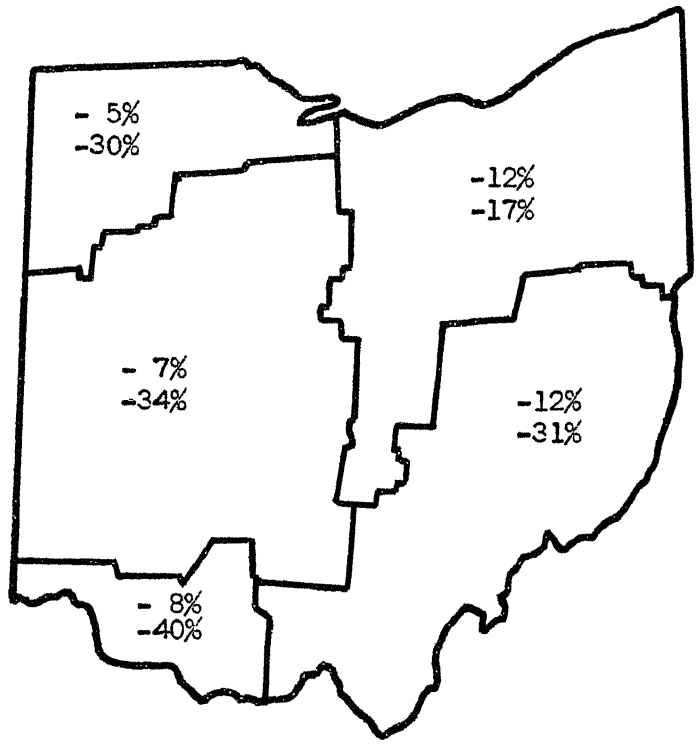


Upper Figure: Total farms
Lower Figure: Farms reporting whole milk sold

SOURCE: Census of Agriculture for Ohio, 1954

During the 1949-1954 period, changes in the number of dairy farms were in the same direction as "all farms", but at a much faster rate in all areas of the state excepting the southwest. For the state as a whole, dairymen have been disappearing at almost a 2 to 1 rate when compared to the total number leaving Ohio farms.

Figure 4: Percentage Change in Total Number of Farms and Percentage Change in Number of Farms Reporting Cream Sold, by Land Use Divisions, Ohio, 1944-1949

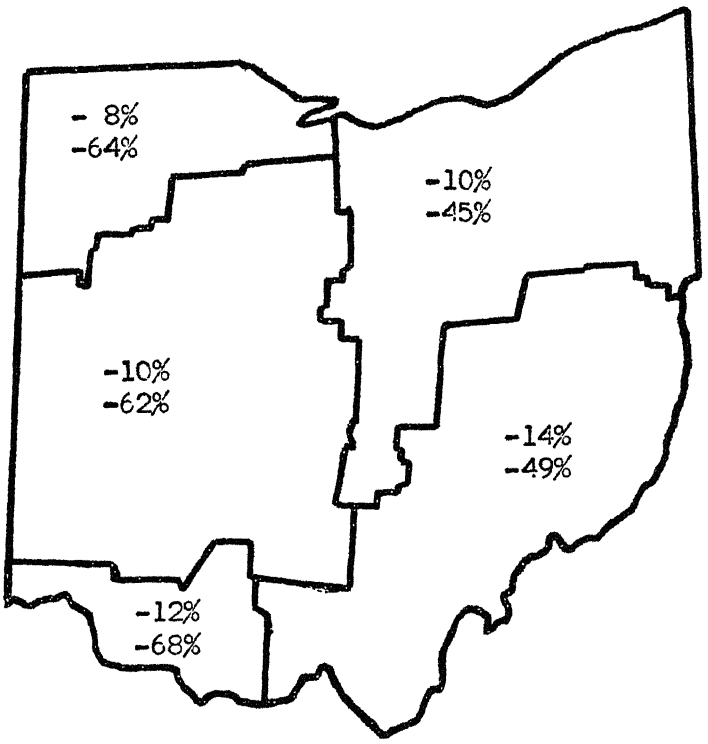


Upper Figure: Total farms
Lower Figure: Farms reporting cream sold

SOURCE: Census of Agriculture for Ohio, 1950

The decline in number of farms reporting cream sold was very rapid in Ohio during the years 1944-1949. It was considerably more rapid than the rate of decline in "all farms", and more rapid than the rate of decline in farms reporting whole milk sold.

Figure 5: Percentage Change in Total Number of Farms and Percentage Change in Number of Farms Reporting Cream Sold, by Land Use Divisions, Ohio, 1949-1954

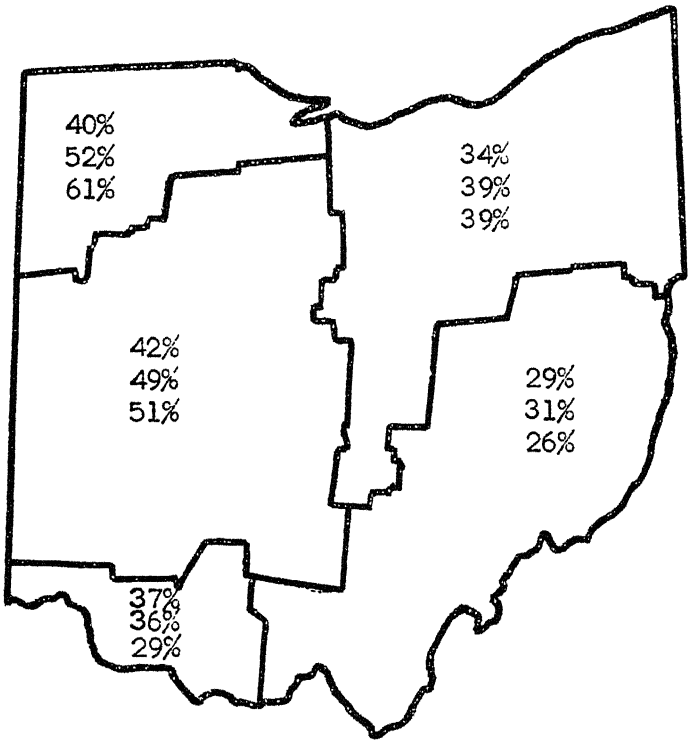


Upper Figure: Total farms
Lower Figure: Farms reporting cream sold

SOURCE: Census of Agriculture for Ohio, 1954

During 1949-1954, the decline in number of farms reporting cream sold was even faster than in the 1944-1949 period. While it is true that the rate of decline in "all farms" was faster in the second five-year period than in the 1944-1949 period, the disappearance of farms reporting cream sales was even more rapid.

Figure 6: Per Cent of All Farms Selling Whole Milk, by Land Use Divisions, Ohio, 1944, 1949, and 1954

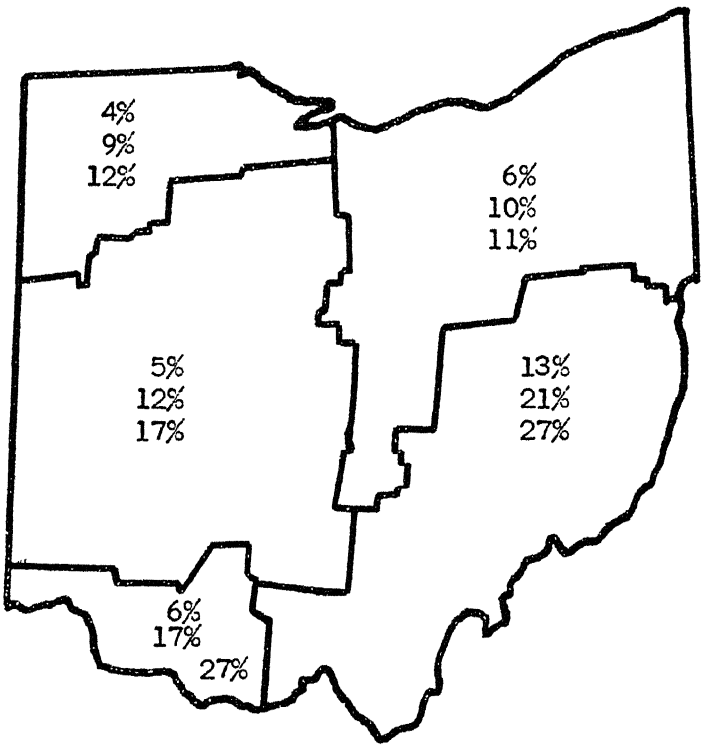


Upper Figure: 1954
Middle Figure: 1949
Lower Figure: 1944

SOURCE: Census of Agriculture for Ohio, 1949 and 1954

The proportion of farms selling whole milk has been declining everywhere in Ohio except in the southwestern and southeastern regions. In southeastern Ohio, the proportion increased from 1944 to 1949, and although it declined from 1949 to 1954, it was still higher than in 1944. A higher percent of farms in western Ohio reported selling whole milk than in eastern Ohio. The rate of decline has also been somewhat higher in western Ohio as compared to eastern Ohio.

Figure 7: Per Cent of All Farms Selling Cream by Land Use Divisions, Ohio, 1944, 1949, and 1954

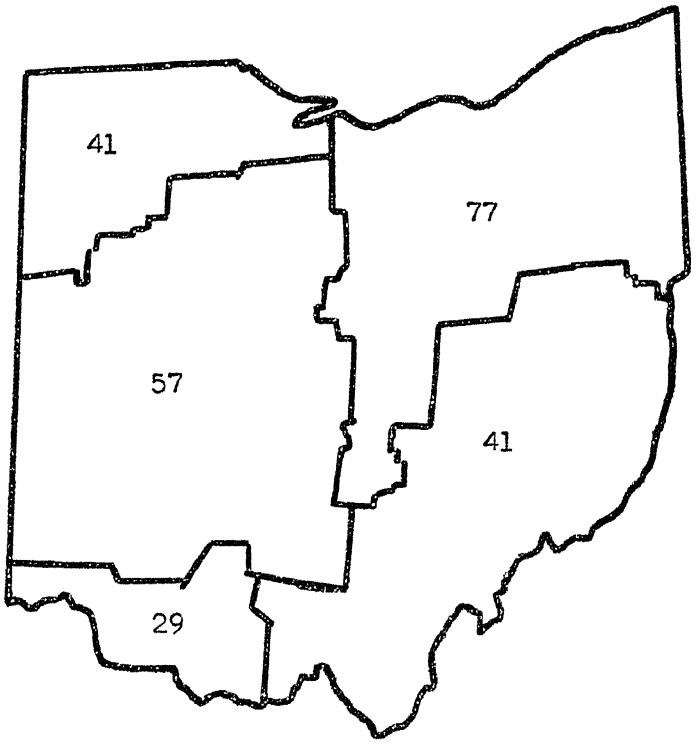


Upper Figure: 1954
Middle Figure: 1949
Lower Figure: 1944

SOURCE: Census of Agriculture for Ohio, 1949 and 1954

The proportion of farms selling cream has been declining in all sections of Ohio. For the state as a whole, the percent of farms reporting cream sales declined from 18 percent in 1944 to 7 percent in 1954. There were 19 million pounds of cream reported sold in 1944, but only 6.7 million pounds in 1954.

Figure 8: Average Increase in Pounds of Whole Milk Sold Per Farm Per Day, by Land Use Divisions, Ohio, 1949-1954



SOURCE: Census of Agriculture for Ohio, 1954.

In northeastern Ohio, there was a larger increase in pounds of whole milk sold per farm per day than in any other division. The smallest increase was in the southwestern district. In these same years, milk production per cow in Ohio increased 17 percent while the number of cows declined nine percent. Milk production per cow was about 5,530 pounds in 1949, and 6,480 pounds in 1954. In 1958 the average production per cow was 6,820 pounds.2/

2/ SOURCE: Agricultural Marketing Service, U.S.D.A., "Milk: Farm Production, Disposition, and Income", 1954-1955 and 1957-1958.

RELATIONSHIPS BETWEEN THE PRODUCTION OF FLUID MILK AND MANUFACTURED MILK IN OHIO, 1948 - 1958

From Chart 1 it is evident that the number of producers selling milk to Ohio manufacturing plants has been declining quite rapidly from 1948 to 1958. This rate seems especially rapid when compared to the decline in farmers selling to the 21 fluid markets. Between 1948 and 1958, more than 5,000 producers stopped selling milk to the 21 fluid markets. This is an 18 percent decline. During the same period, nearly 21,000 producers stopped selling to manufacturing plants. This is a 40 percent decline.

In 1948 there were nearly twice (1.7 times) as many Ohio producers selling to manufacturing plants as were selling to the 21 fluid markets. This relationship had changed by 1958 when there were only 1.3 as many producers selling to manufacturing plants. Considering manufacturing and fluid producers together, there was a net decrease of 26,008 dairymen selling milk between 1948 and 1958.

AVERAGE MONTHLY PURCHASES OF MILK

Chart 2

The volume of milk purchased per month at the 21 fluid milk markets has been increasing at a rapid pace between 1948 and 1958. In contrast to this development, the average monthly volume purchased from dairy farmers by manufacturing plants has been fairly steady, with a slight tendency downward. Monthly manufacturing purchases hit their peak in 1945 in Ohio, and 1946 was the last year when the monthly volume of manufacturing purchases was higher than the volume purchased per month at the 21 fluid markets. It should be recognized that many Ohio manufacturers have been purchasing milk from some fluid markets largely on a seasonal basis.

Chart 3

From 1948 to 1958, there has been a steady and rather rapid increase in average volume of milk purchased per producer per day at the 21 fluid markets. The volume purchased per producer has been much smaller for manufacturing plants, and while it has shown some increase in the years 1948-1958, the rate has been slower than that in the fluid markets.

The average daily purchases per producer by the 21 fluid markets was 189 pounds in 1948, and 411 in 1958. This is a 117 percent increase. The average daily purchase per producer by the manufacturing plants was not quite 89 pounds in 1948, and 123 pounds in 1958. This is a 39 percent increase.

Chart 4

The problem of seasonal variations in milk receipts is more acute for manufacturing plants than for the 21 fluid markets. In 1958, peak receipts were 130 percent of the 1958 average for manufacturing plants, while for the 21 fluid markets the peak receipts were 114 percent of the 1958 average. The peak in manufacturing receipts occurred in June and for the 21 fluid markets the peak was in May.

Lowest receipts of manufacturing milk occurred in December, when receipts were 75 percent of the 1958 average. Lowest receipts from the 21 fluid markets occurred in August, when receipts were 93 percent of the 1958 average.

SHIFTS IN MILK MANUFACTURING PLANTS

Ohio milk manufacturing plants purchased approximately 1.7 billion pounds of milk in 1948, and about 1.4 billion pounds in 1958. This is a decline of about 300 million pounds. By contrast, purchases at the 21 fluid markets rose from about two billion pounds in 1948 to approximately 3.6 billion pounds in 1958. This is an increase of about 1.6 billion pounds.

It should be noted that the total purchases at the 21 Ohio fluid markets and the manufacturing plants do not represent 100 percent of the milk produced on Ohio farms. The above figures total 5,001,400,000 pounds, while total production is estimated to be 5,374,000,000 pounds. Purchases at the 21 fluid markets plus manufacturing plants therefore represent 93 percent of the total Ohio milk production.

The decline in volume of milk purchased by manufacturing plants helps explain the decline in number of such plants. The number of Ohio plants manufacturing creamery butter, cheese, and evaporated milk declined from 133 in 1952 to 105 in 1957. Other examples of this decline in plant numbers are shown in the following pages.

Data relative to shifts in Ohio manufacturing plants were obtained from the Agricultural Estimates Division of the Agricultural Marketing Service. Many plants have diversified operations, so a plant might be listed several times. In many instances, the decline in plant numbers is a result of specialization and a resulting decline in the number of products being manufactured. This is especially true in regions of concentrated fluid milk markets.

Figure 9: Number of Dairy Plants Manufacturing Sweetened Condensed Milk, by Crop Reporting Districts Ohio, 1952-1957

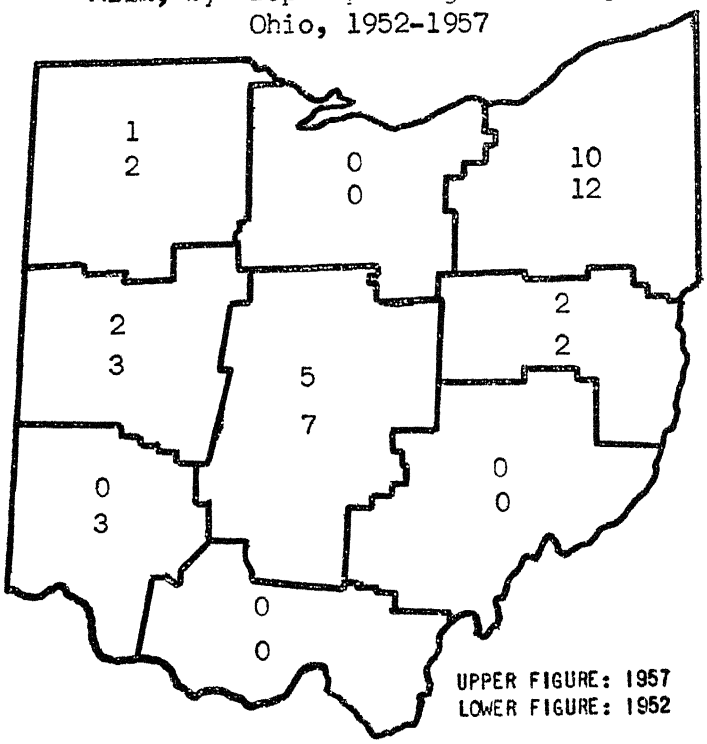
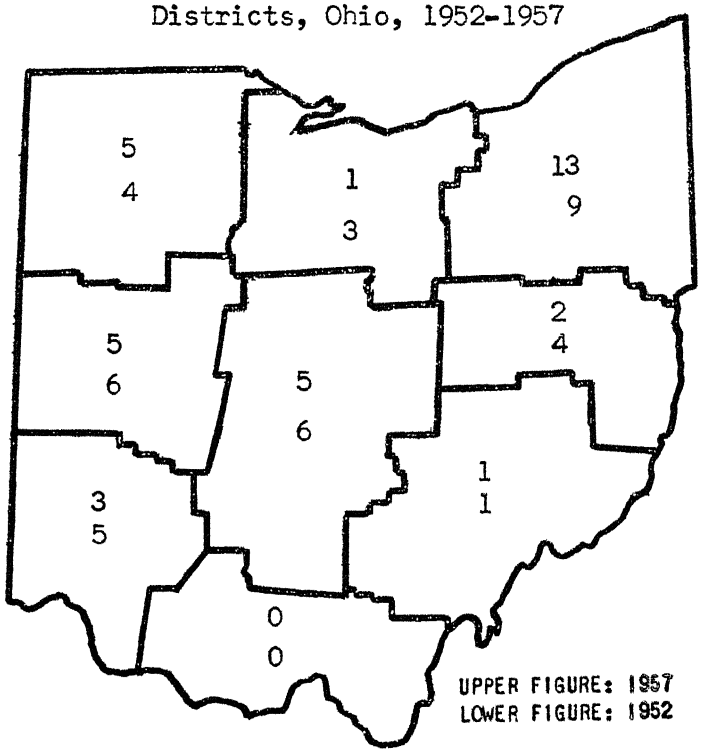


Figure 10: Number of Dairy Plants Manufacturing Unsweetened Condensed Milk, by Crop Reporting Districts, Ohio, 1952-1957



In Figures 9 and 10, the record is fairly clear: Farmers are finding fewer and fewer outlets for milk to be used for manufacturing either sweetened or unsweetened condensed milk. There were 29 Ohio plants manufacturing sweetened condensed milk in 1952, but only 20 in 1957. This is a 31 percent decline. The number of Ohio plants manufacturing unsweetened condensed milk declined from 38 in 1952 to 35 in 1957.

Figure 11: Number of Dairy Plants Manufacturing American Cheddar and Other American Cheeses, by Crop Reporting Districts, Ohio, 1952-1957

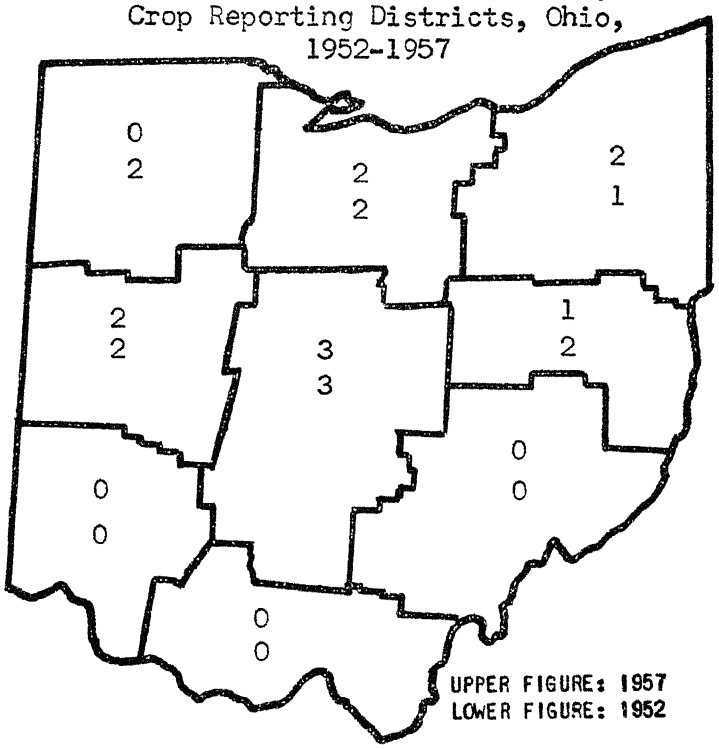
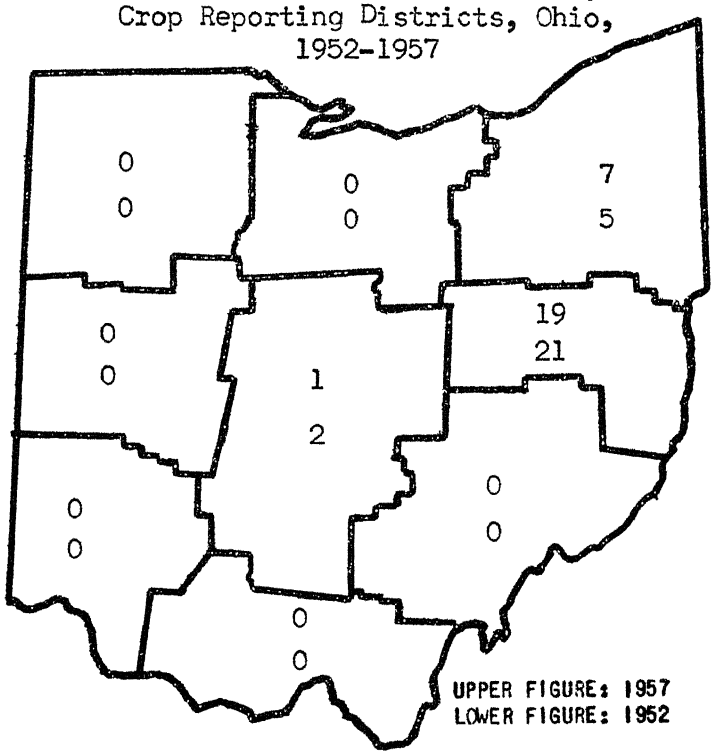


Figure 12: Number of Dairy Plants Manufacturing Swiss Cheese, by Crop Reporting Districts, Ohio, 1952-1957



The only increase in the number of plants manufacturing American cheddar and other American cheeses took place in northeastern Ohio. This statement is true also for Swiss cheese plants. The concentration of Swiss plants is obviously in the eastern and northeastern parts of Ohio, where certain local cultures have a special interest in this industry.

Figure 13: Number of Dairy Plants Manufacturing Nonfat Dry Milk for Human Food, Spray Process, by Crop Reporting Districts, Ohio, 1952-1957

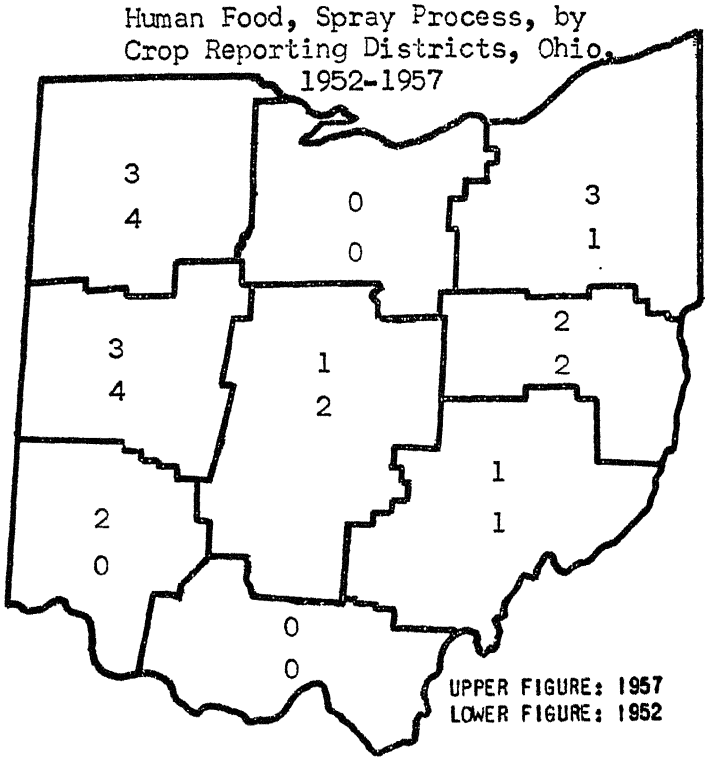
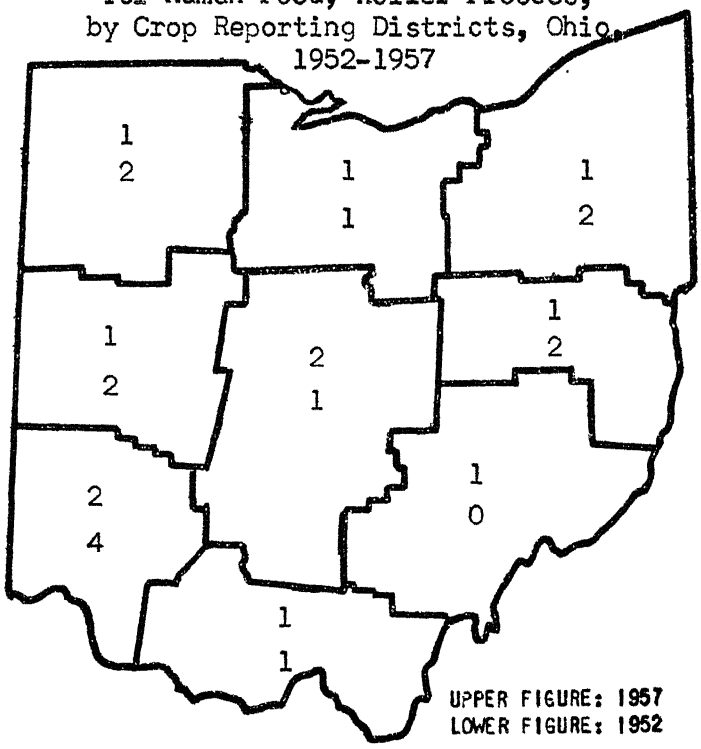
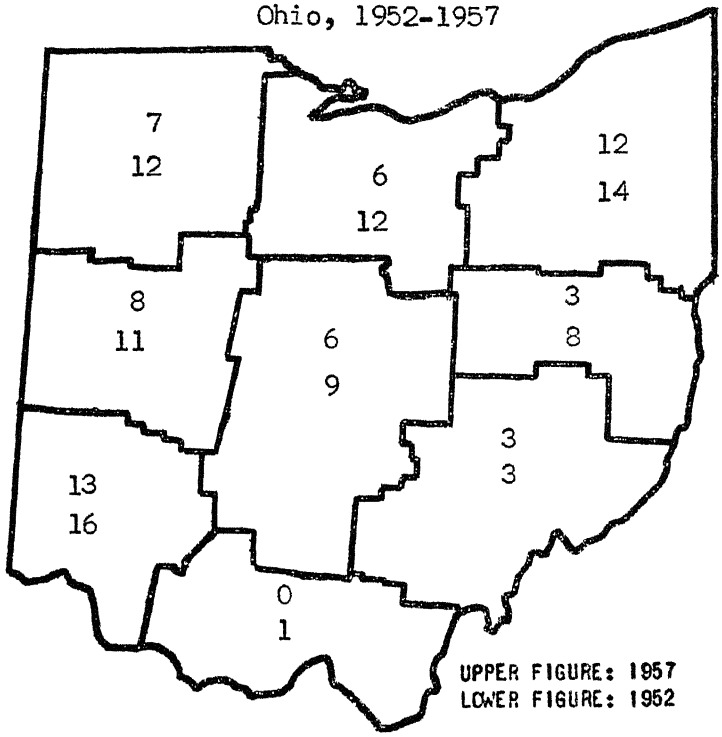


Figure 14: Number of Dairy Plants Manufacturing Nonfat Dry Milk for Human Food, Roller Process, by Crop Reporting Districts, Ohio, 1952-1957



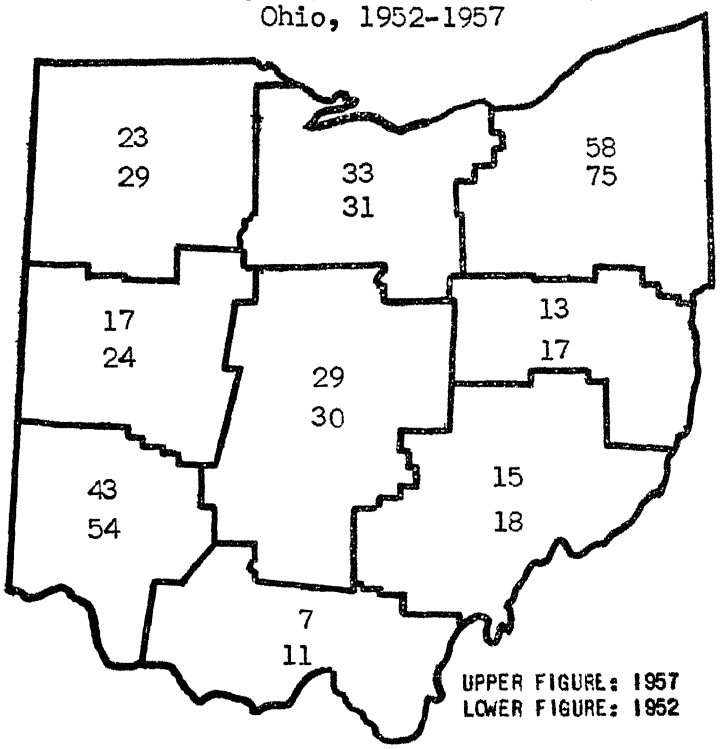
In both 1952 and 1957, there were very few plants manufacturing nonfat dry milk for human food. However, plants using the spray process increased slightly, while plants using the roller process declined slightly. The increase of plants using the spray process was in northeastern Ohio.

Figure 15: Number of Dairy Plants Manufacturing Creamery Butter, by Crop Reporting Districts, Ohio, 1952-1957



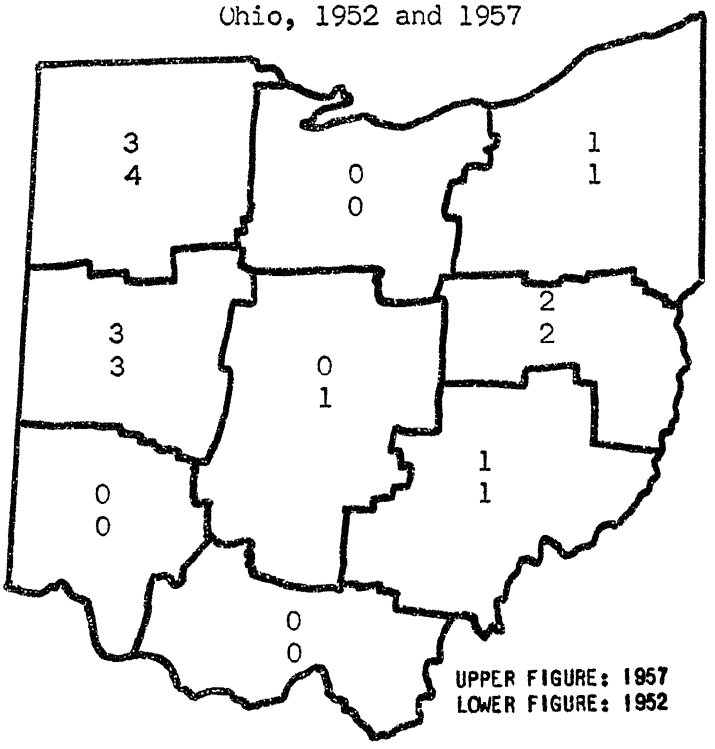
The number of plants manufacturing creamery butter has declined from 86 in 1952 to 58 in 1957. This is a 33 percent decline. These plants are least concentrated in southeastern Chio.

Figure 16: Number of Dairy Plants Manufacturing Cottage Cheese, by Crop Reporting Districts, Ohio, 1952-1957



There are fewer dairy plants manufacturing cottage cheese in southern Ohio than in any other part of the state. In all districts but one, the number has declined in the years 1952 to 1957. Since cottage cheese is largely produced locally, most of these plants are located in and around the large cities.

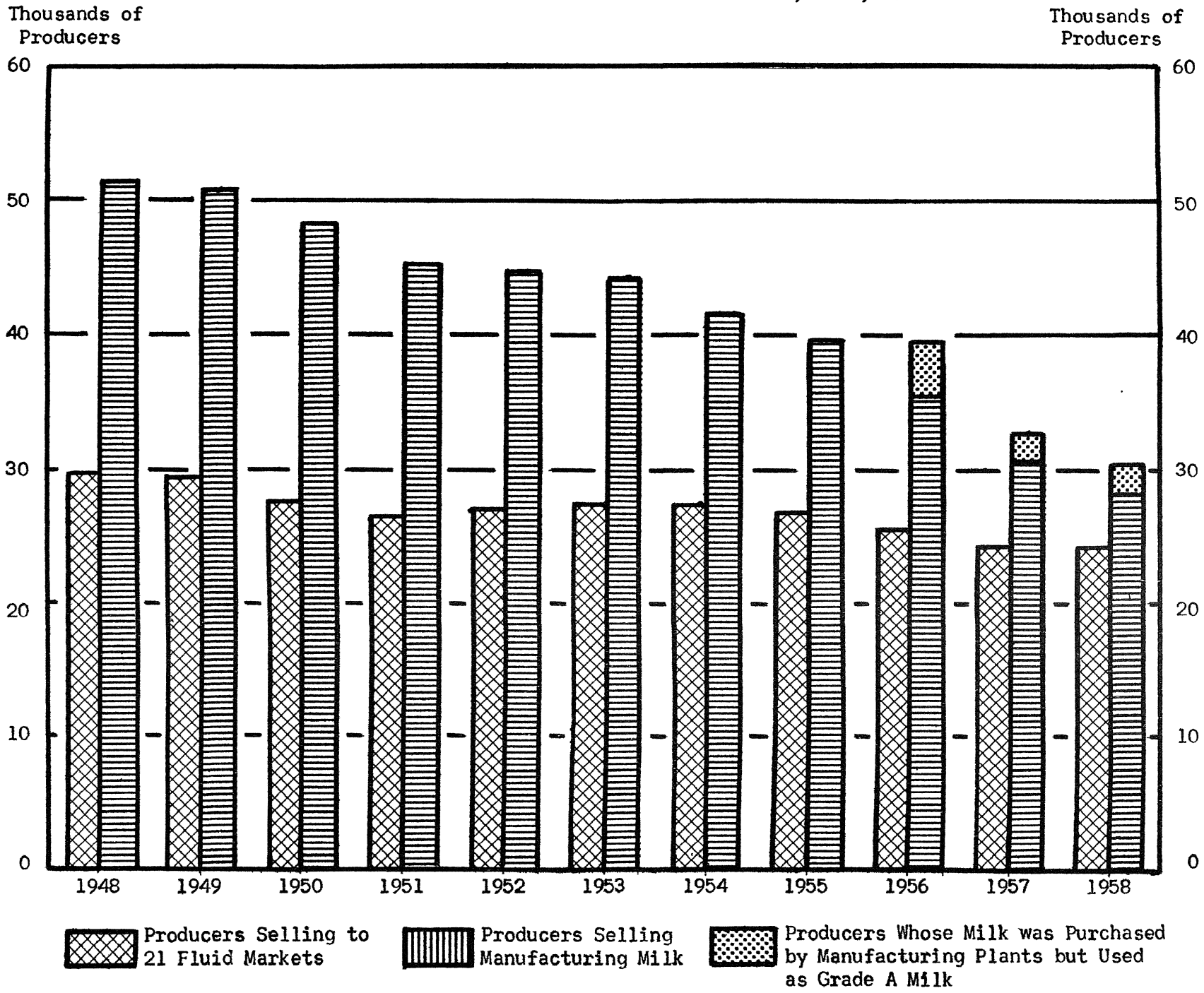
Figure 17: Number of Dairy Plants Manufacturing Evaporated Unskimmed Milk, by Crop Reporting Districts, Ohio, 1952 and 1957



There were very few Ohio dairy plants manufacturing evaporated unskimmed milk in either 1952 or 1957, and their number declined during this period.

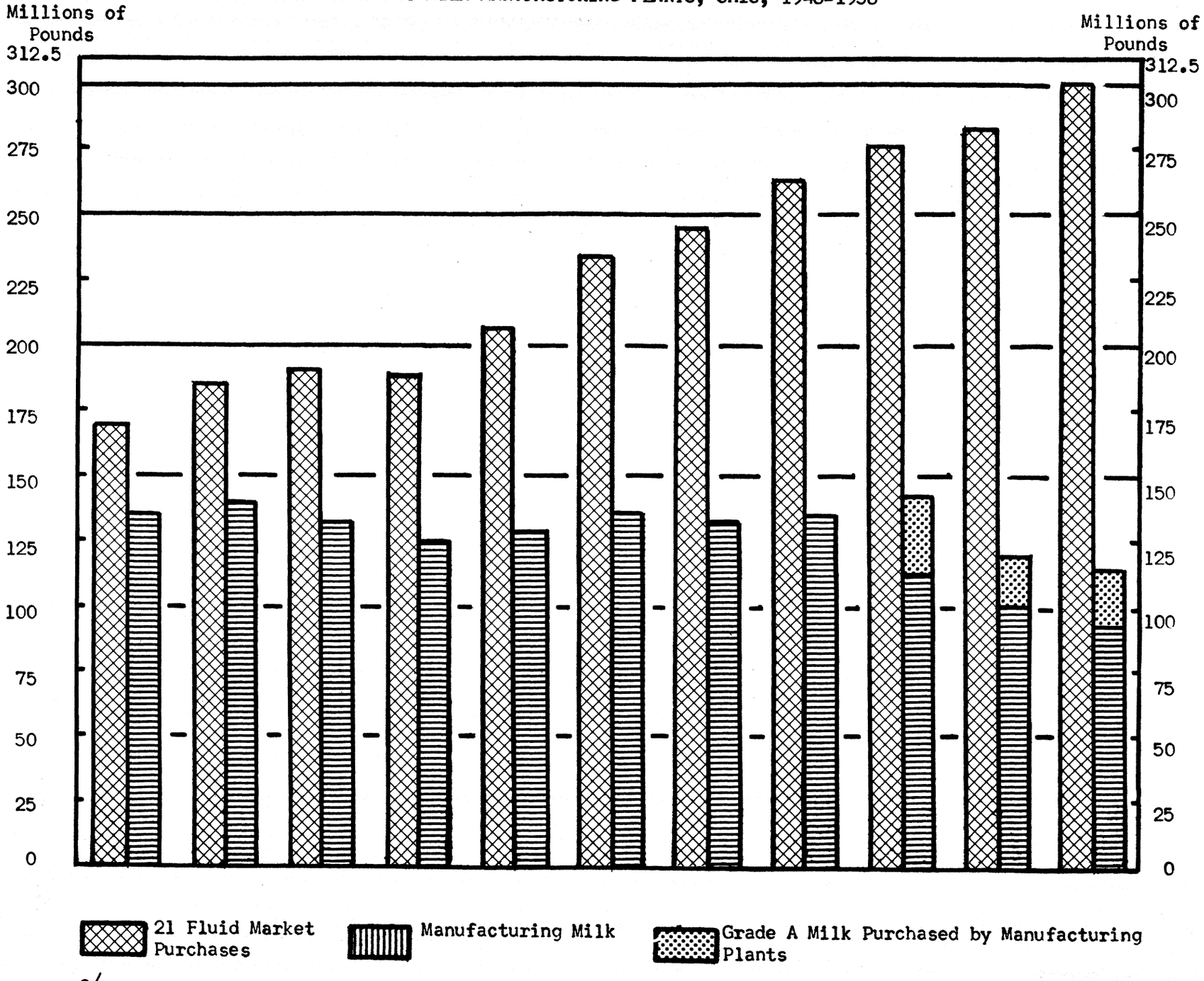
APPENDIX: COUNTY DATA

Chart 1 - AVERAGE NUMBER OF PRODUCERS SELLING MILK TO TWENTY-ONE FLUID MILK MARKETS AND AVERAGE NUMBER SELLING TO MILK MANUFACTURING PLANTS, OHIO, 1948-1958



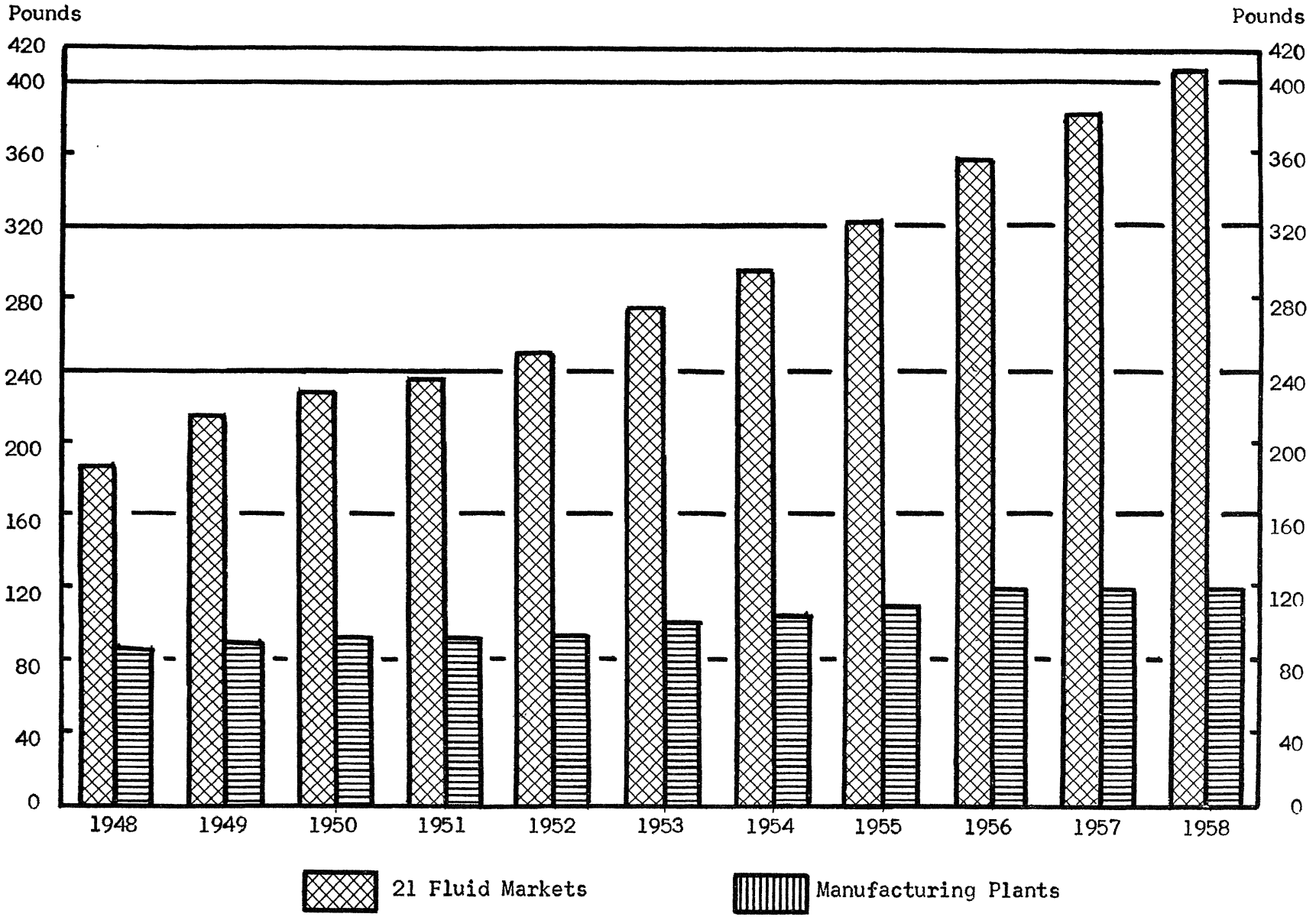
Source: United States Department of Agriculture, "Ohio Monthly Dairy Report."

Chart 2 - AVERAGE VOLUME OF MILK PURCHASED PER MONTH AT TWENTY-ONE[a/] FLUID MILK MARKETS AND BY MILK MANUFACTURING PLANTS, OHIO, 1948-1958



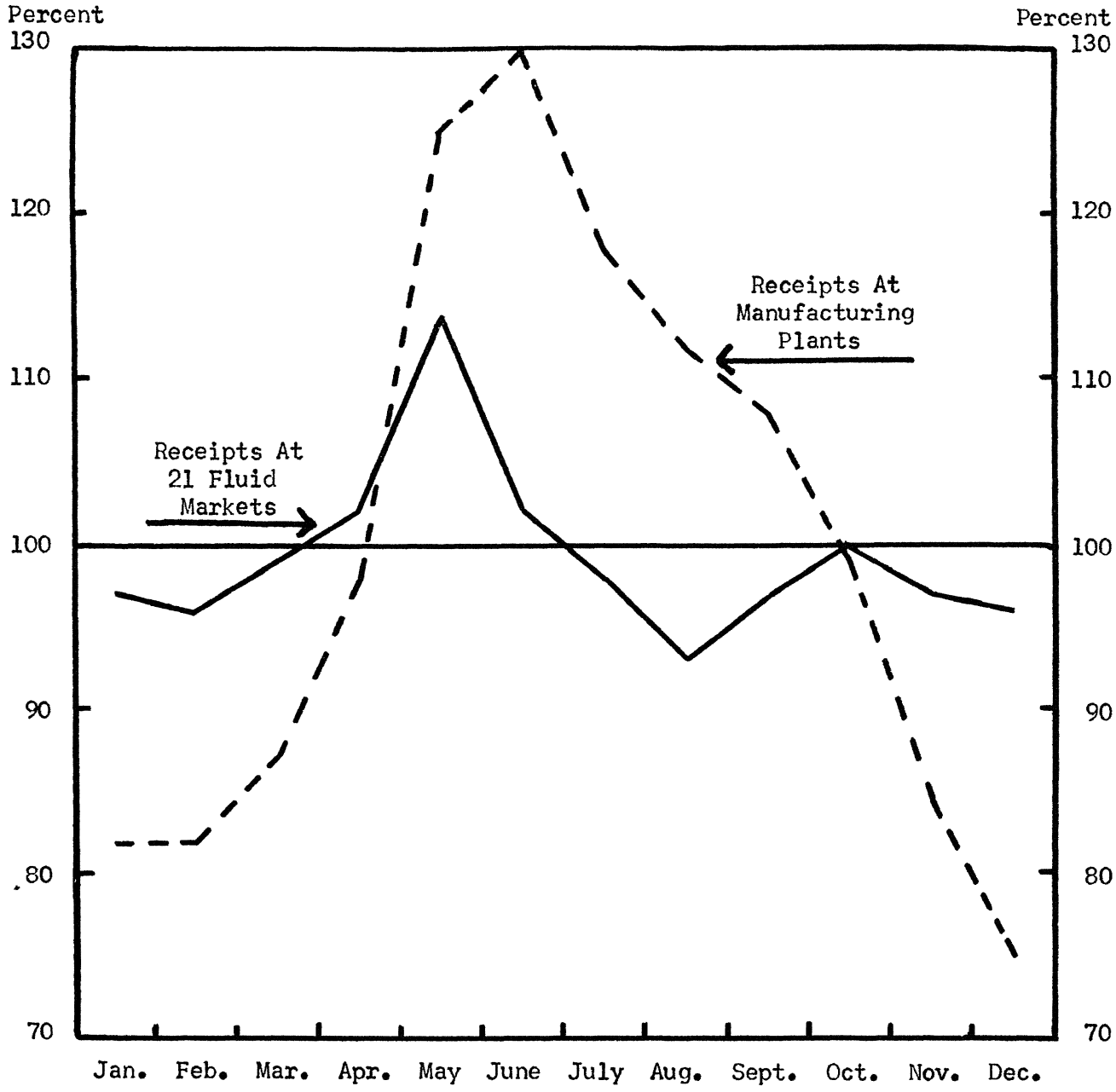
[a/] Data for major fluid markets for 1958 includes Wheeling, Southern Ohio, and South Central Ohio market areas not included in reports for previous years. Therefore data for the major fluid markets for 1958 are not entirely comparable with previous years. Source: "Ohio Monthly Dairy Report"

Chart 3 - AVERAGE VOLUME OF MILK PURCHASED PER PRODUCER PER DAY AT TWENTY-ONE FLUID MILK MARKETS AND BY MILK MANUFACTURING PLANTS, OHIO, 1948-1958



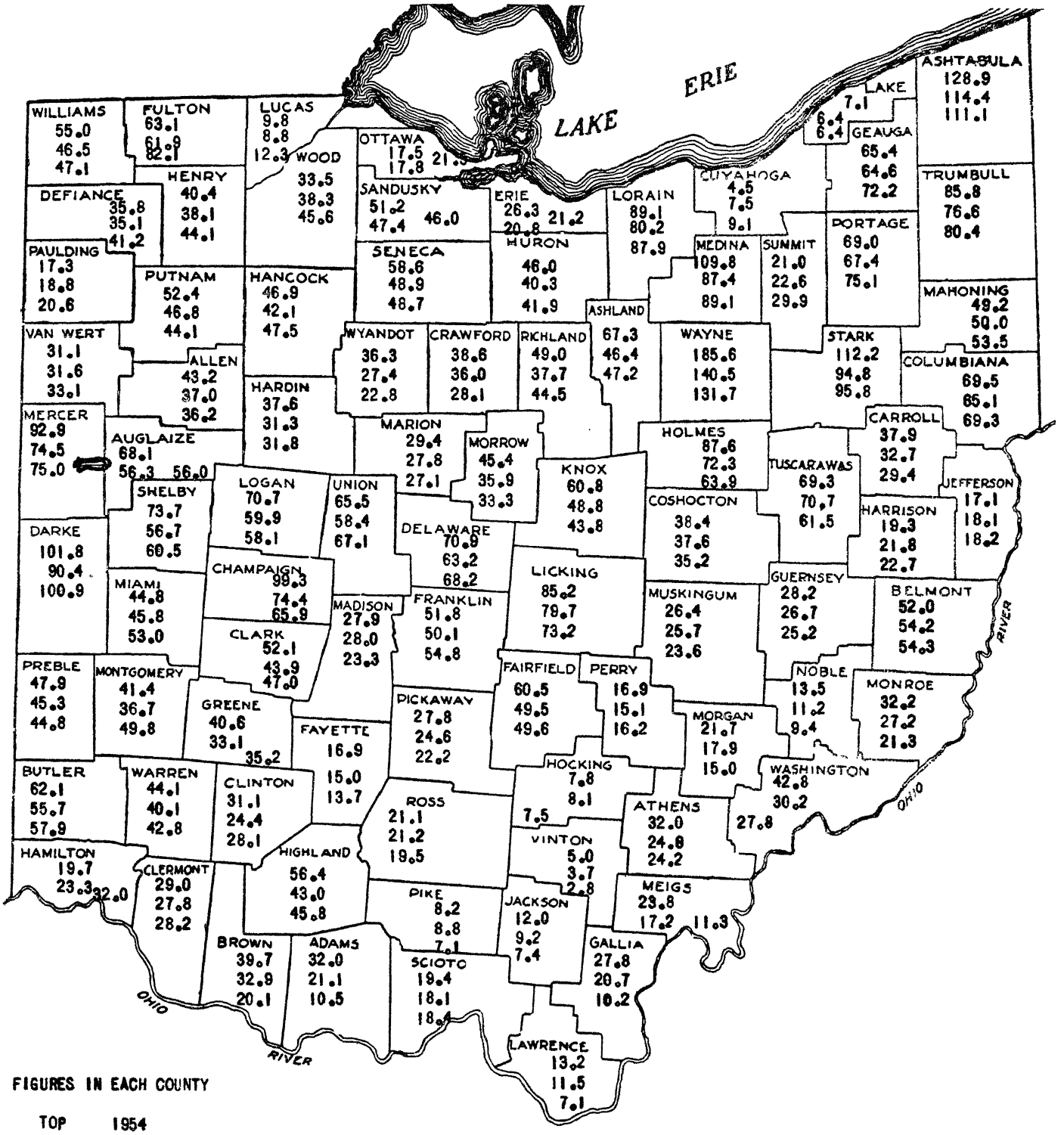
Source: United States Department of Agriculture, "Ohio Monthly Dairy Report."

Chart 4 - Average Daily Milk Receipts Per Month
At 21 Fluid Markets And At Manufacturing
Plants Expressed As Per Cent Of Average
For Year, Ohio, 1958



SOURCE: "Ohio Monthly Dairy Report"

Figure 1-A : Pounds of Whole Milk Sold from Ohio Farms, by Counties, 1944, 1949, and 1954 (in millions of pounds).

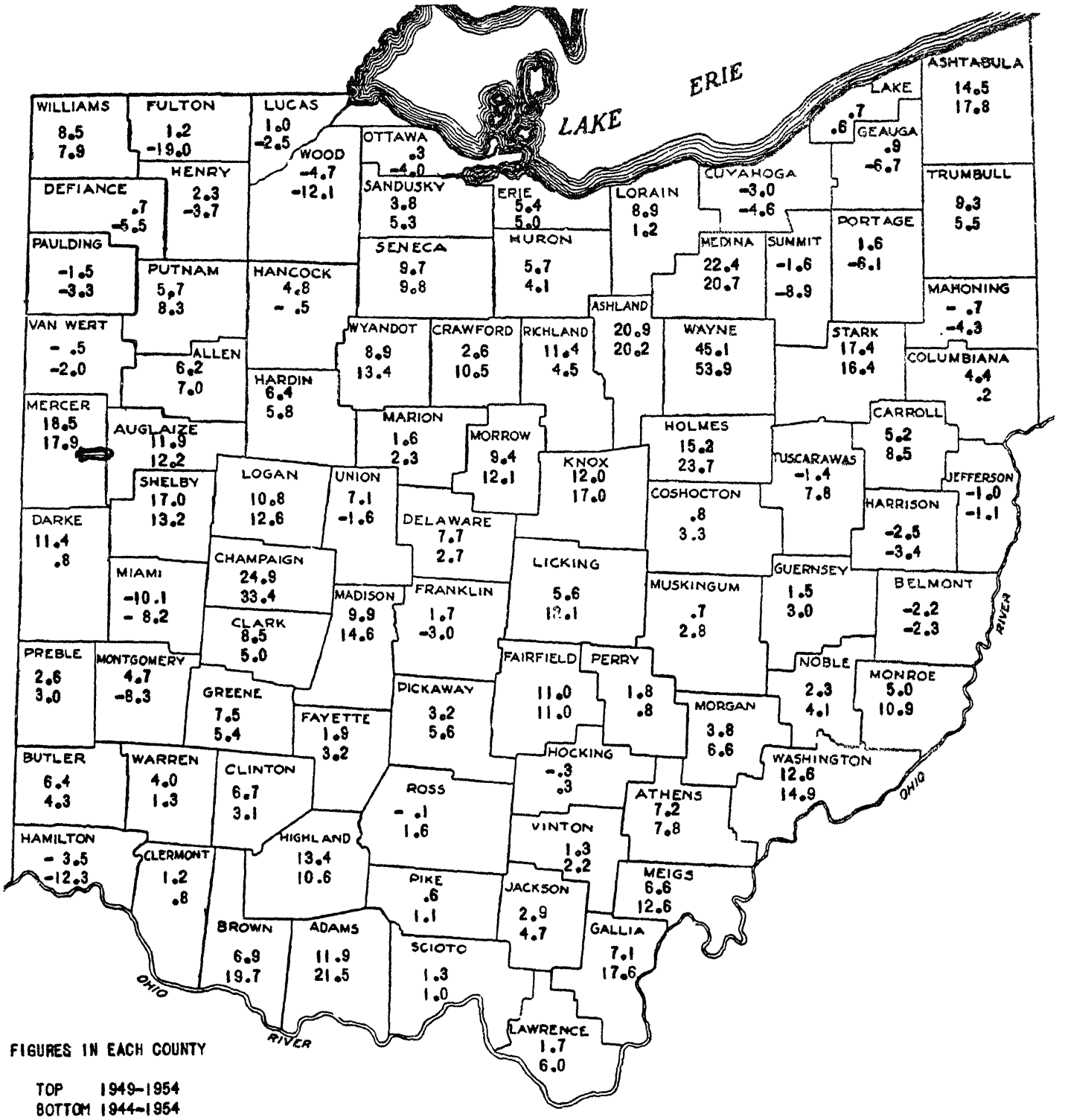


FIGURES IN EACH COUNTY

TOP 1954
MIDDLE 1949
BOTTOM 1944

SOURCE: CENSUS OF AGRICULTURE FOR OHIO, 1950 AND 1954.

Figure 2-A : Change in Pounds of Whole Milk Sold from Ohio Farms, by Counties, 1944 - 1954 and 1949 - 1954 (in millions of pounds).



SOURCE: Figure 1-A

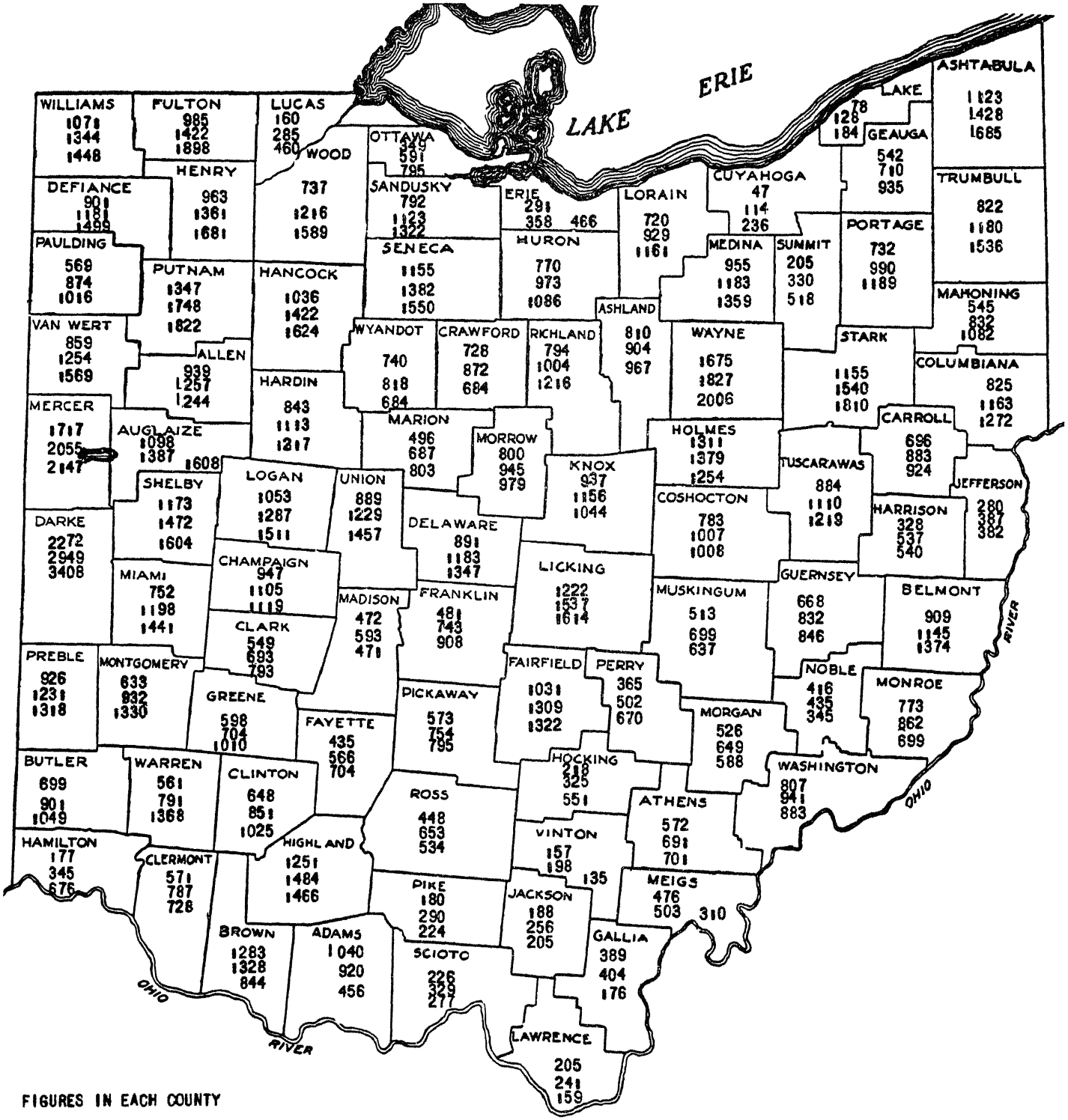
Figure 3-A : Percentage Change in Pounds of Whole Milk Sold from Ohio Farms, by Counties, 1944 - 1954 and 1949 - 1954.

FIGURES IN EACH COUNTY

TOP 1949-1954
BOTTOM 1944-1954

SOURCE: FIGURE 1-A

Figure 4-A : Number of Farms Reporting Whole Milk Sold, by Counties, Ohio 1944, 1949, and 1954.

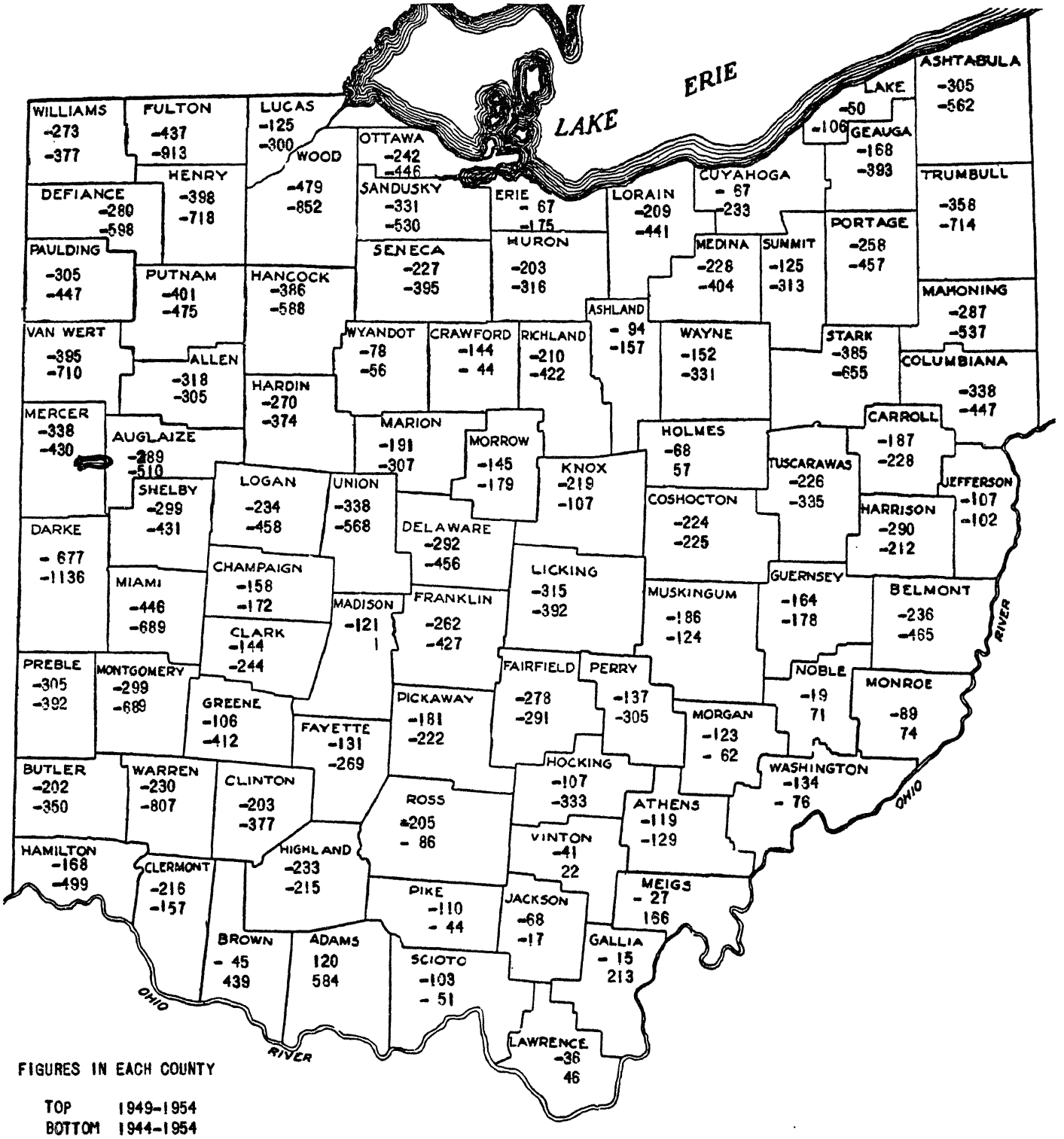


FIGURES IN EACH COUNTY

TOP 1954
MIDDLE 1949
BOTTOM 1944

SOURCE: CENSUS OF AGRICULTURE FOR OHIO, 1950 AND 1954.

Figure 5-A: Change in Number of Farms Reporting Whole Milk Sold, by Counties, Ohio, 1944 - 1954 and 1949 - 1954.

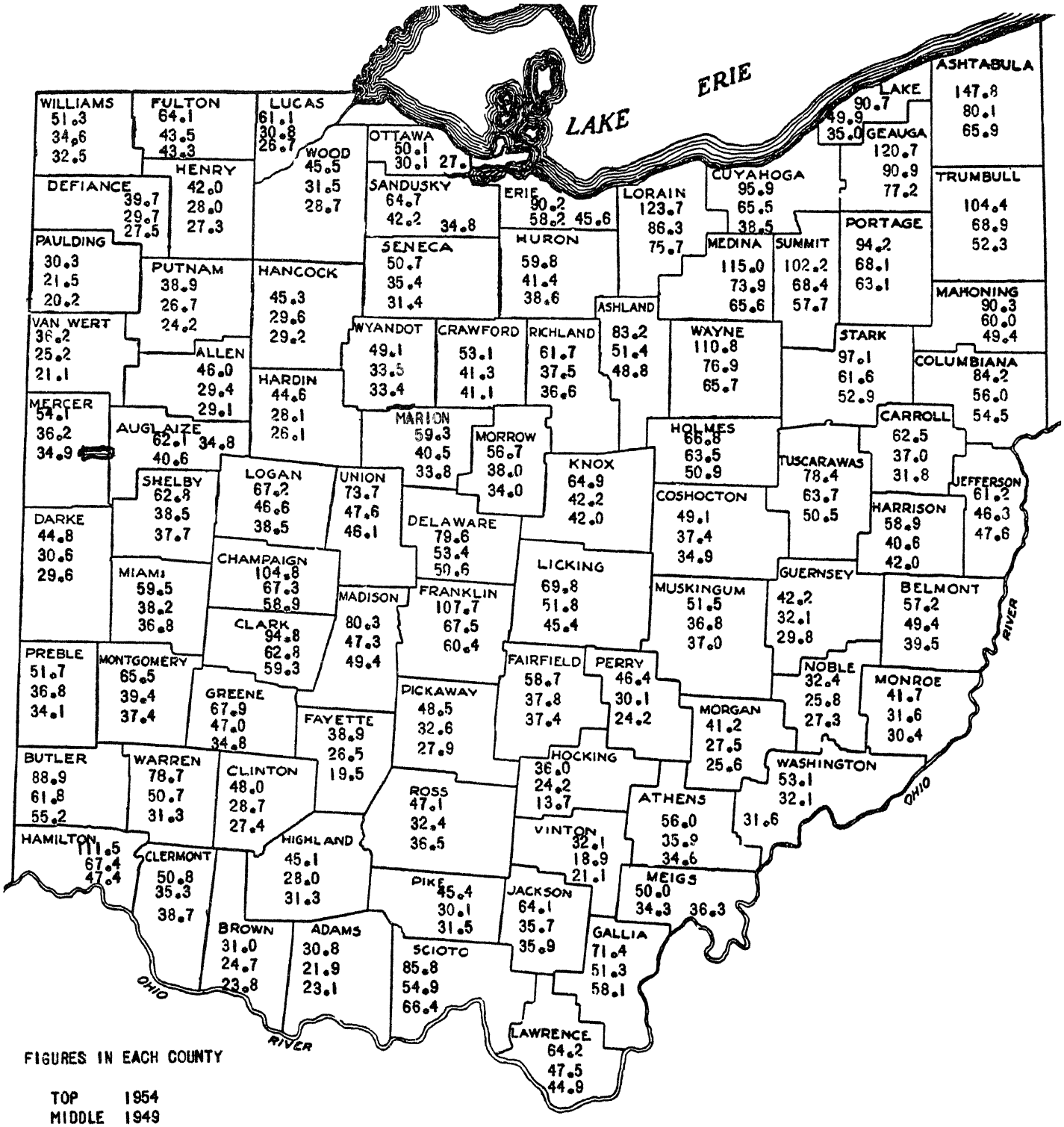


FIGURES IN EACH COUNTY

TOP 1949-1954
BOTTOM 1944-1954

SOURCE: FIGURE 4-A

Figure 6-A: Average Pounds of Whole Milk Sold Per Farm Per Year, by Counties, Ohio, 1944, 1949 and 1954 (in thousands of pounds).

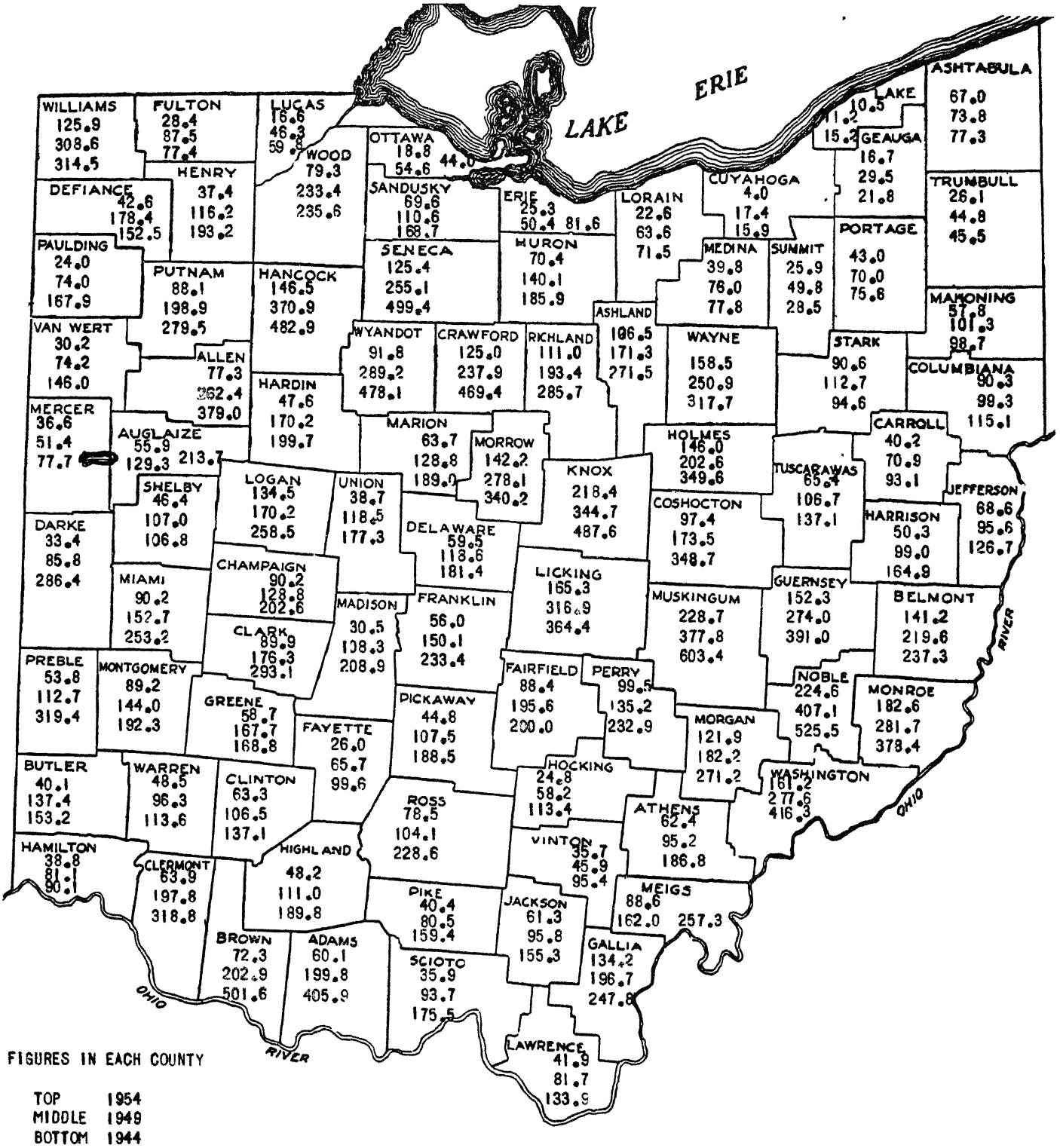


FIGURES IN EACH COUNTY

TOP 1954
MIDDLE 1949
BOTTOM 1944

SOURCE: FIGURES 1-A and 4-A

Figure 7-A: Pounds of Cream Sold from Ohio Farms, by Counties, 1944, 1949, and 1954 (in thousands of pounds).

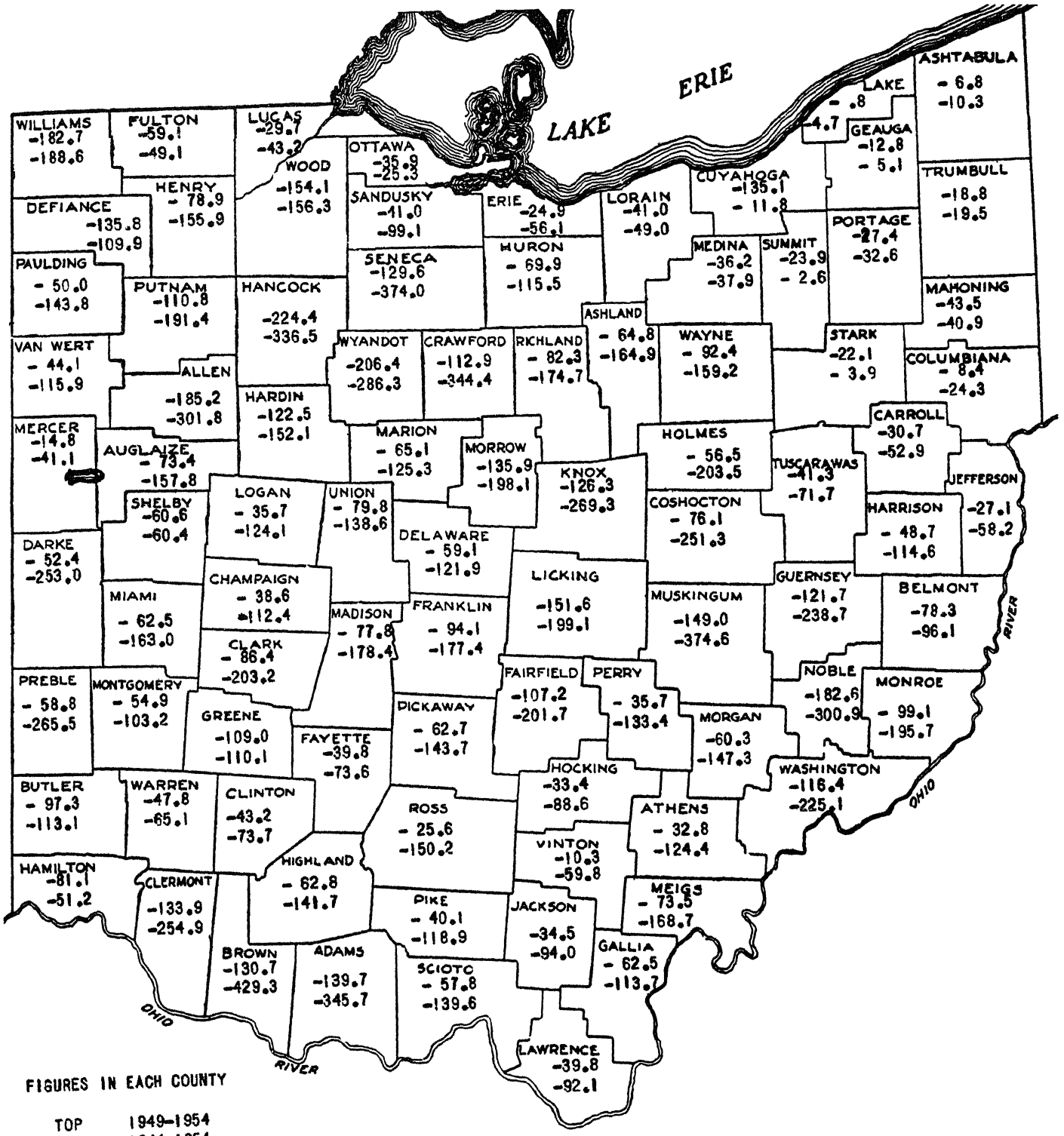


FIGURES IN EACH COUNTY

TOP 1954
MIDDLE 1949
BOTTOM 1944

SOURCE: CENSUS OF AGRICULTURE FOR OHIO, 1950 AND 1954

Figure 8-A: Change in Pounds of Cream Sold from Ohio Farms, 1944 - 1954 and 1949 - 1954 (in thousands of pounds).

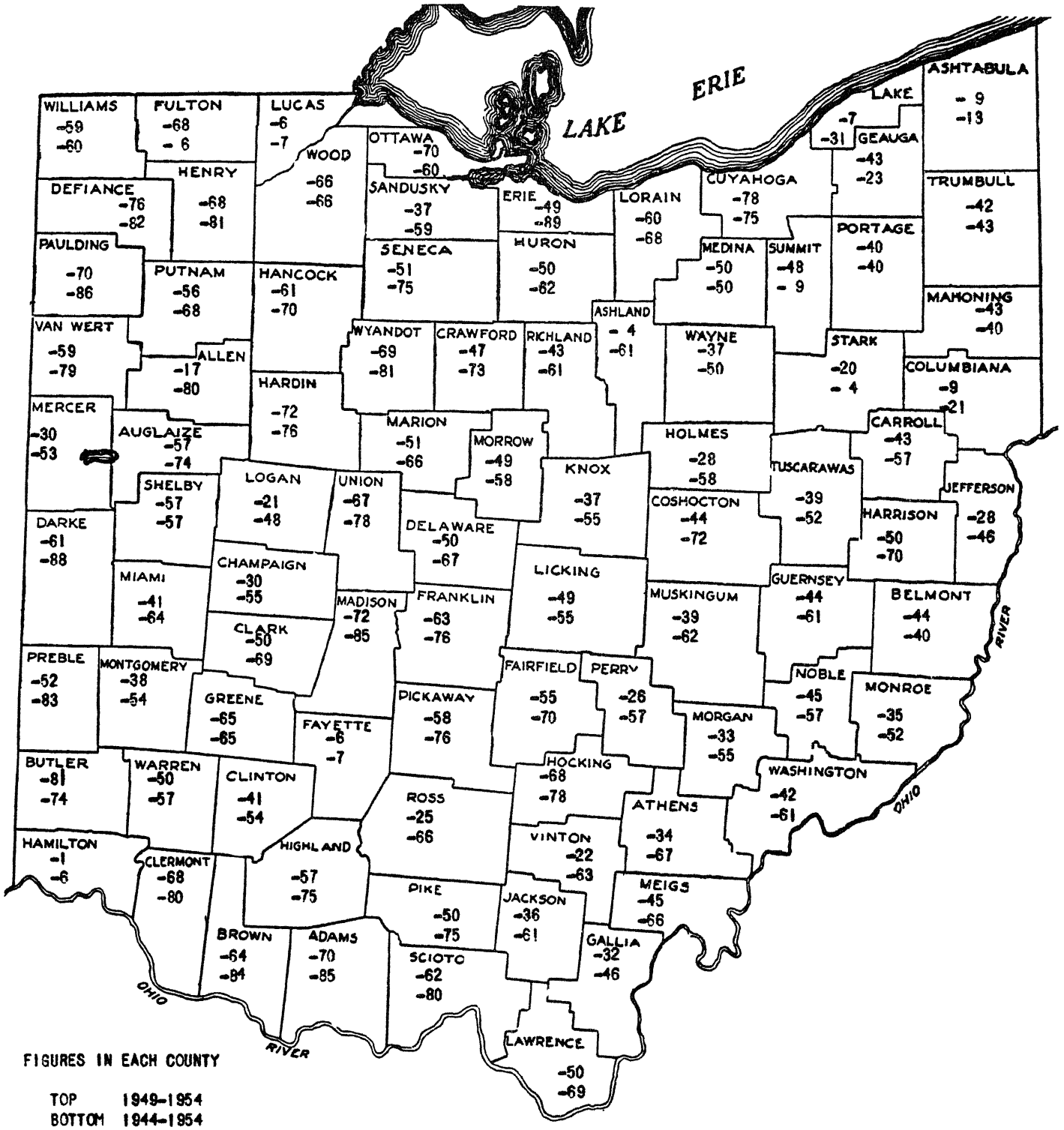


FIGURES IN EACH COUNTY

TOP 1949-1954
BOTTOM 1944-1954

SOURCE: FIGURE 7-A

Figure 9-A: Percentage Change in Pounds of Cream Sold from Ohio Farms, 1944 - 1954 and 1949 - 1954.

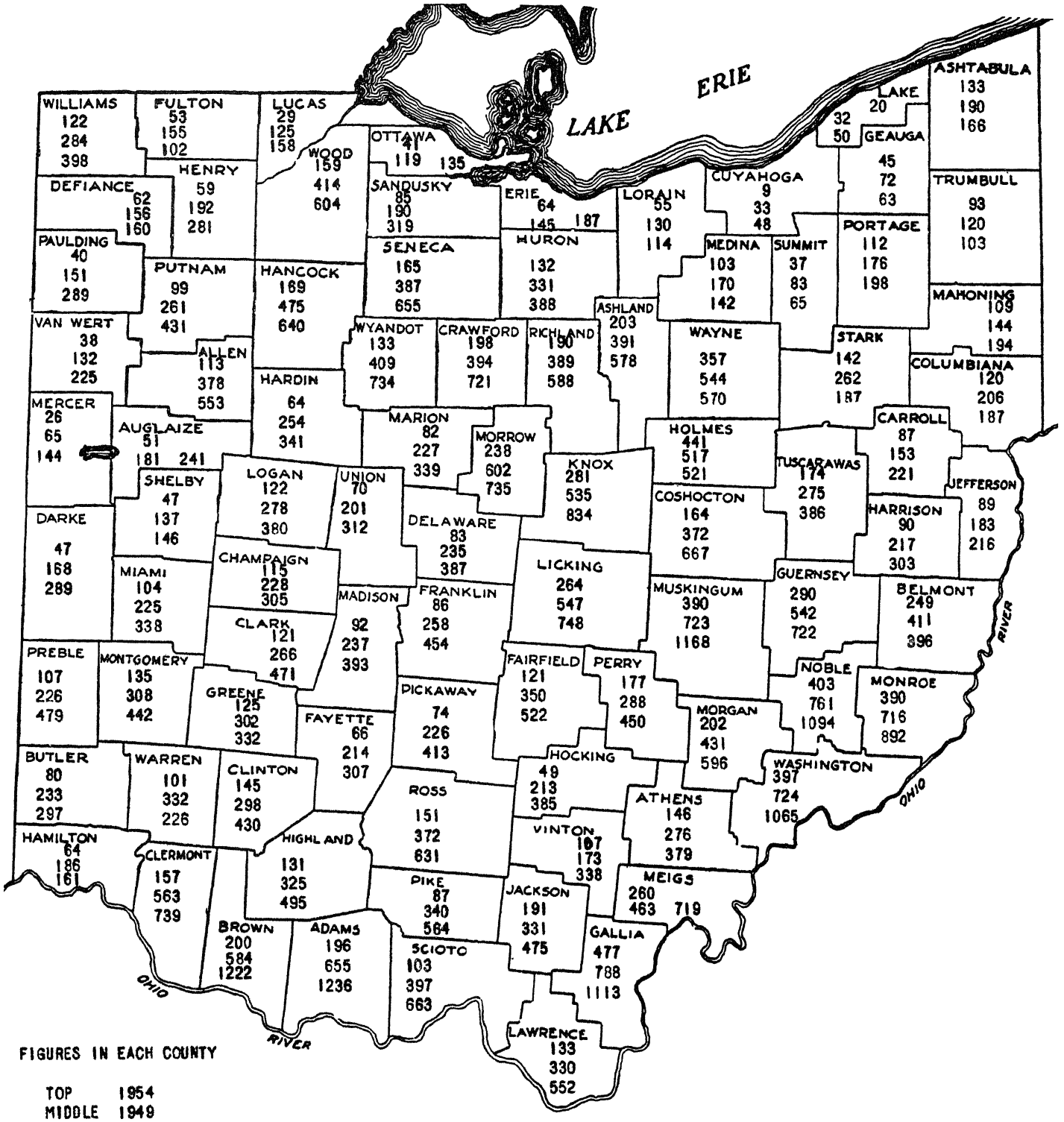


FIGURES IN EACH COUNTY

TOP 1949-1954
BOTTOM 1944-1954

SOURCE: FIGURE 7-A

Figure 10-A: Number of Farms Reporting Cream Sold, by Counties, Ohio, 1944, 1949, and 1954.

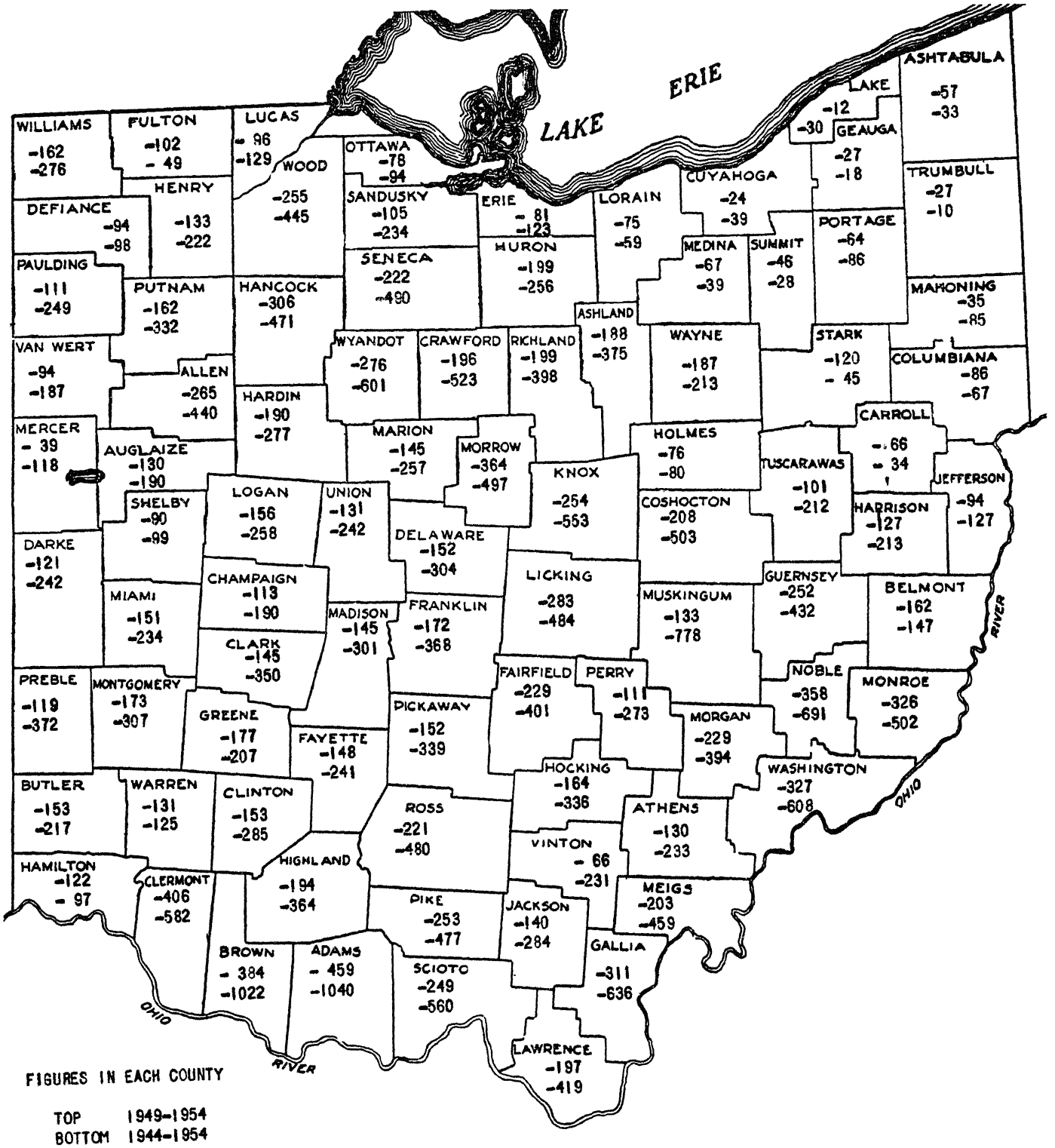


FIGURES IN EACH COUNTY

TOP 1954
MIDDLE 1949
BOTTOM 1944

SOURCE: CENSUS OF AGRICULTURE FOR OHIO, 1950 AND 1954

Figure 11-A: Change in Number of Farms Reporting Cream Sold, by Counties, Ohio, 1944 - 1954 and 1949 - 1954.

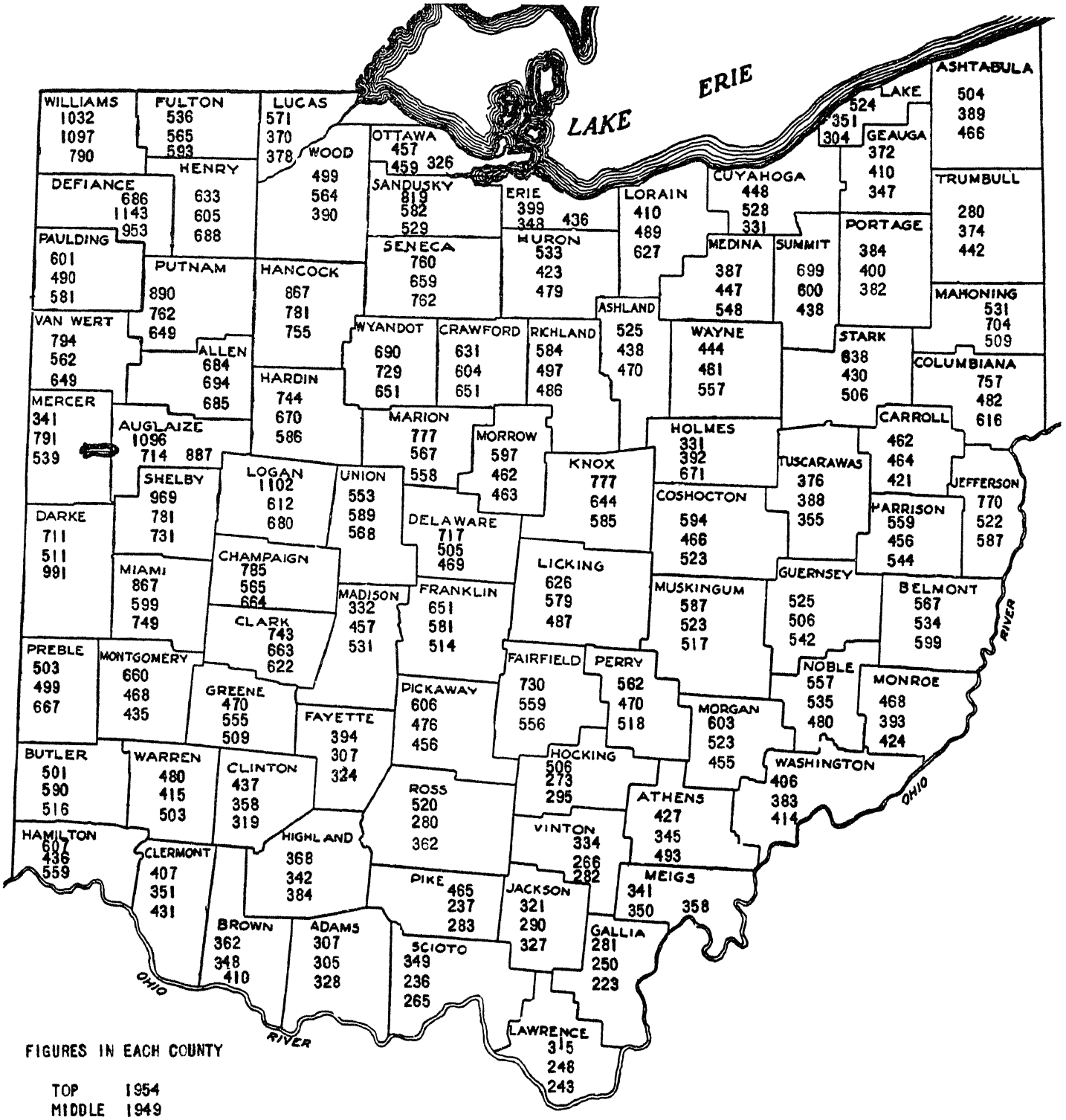


FIGURES IN EACH COUNTY

TOP 1949-1954
BOTTOM 1944-1954

SOURCE: FIGURE 10-A

Figure 12-A: Average Pounds of Cream Sold Per Farm Per Year, by Counties, Ohio, 1944, 1949 and 1954.

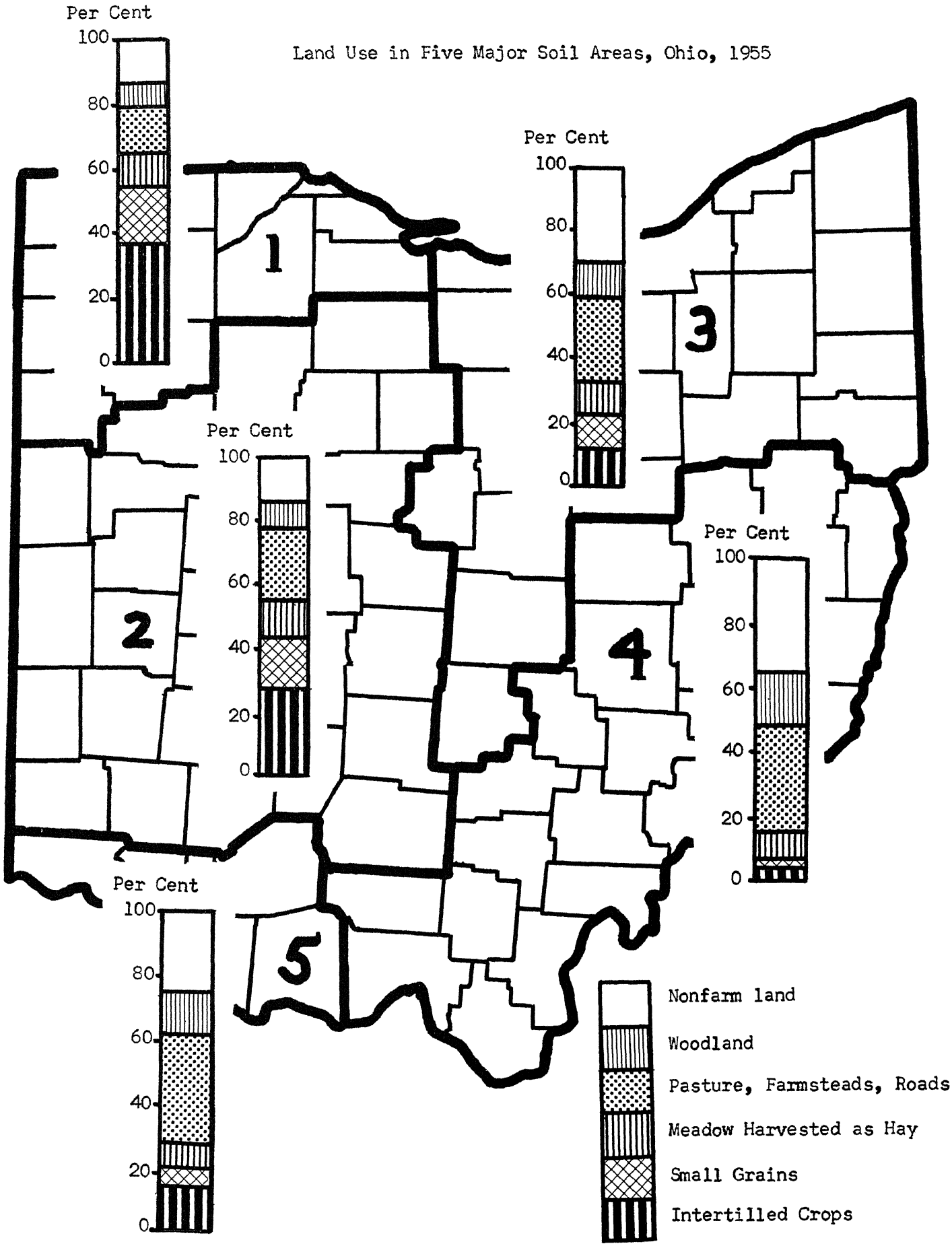


FIGURES IN EACH COUNTY

TOP 1954
MIDDLE 1949
BOTTOM 1944

SOURCE: FIGURES 7-A and 10-A

Land Use in Five Major Soil Areas, Ohio, 1955



SOURCE: PROCEEDINGS OF THE OHIO MID-CENTURY GOVERNOR'S CONFERENCE ON NATURAL RESOURCES, THE OHIO STATE UNIVERSITY, MAY 14 - 15, 1958, PP. 55 AND 56.